International Management Digest

JUNE 1958
ONE DOLLAR (U.S.)

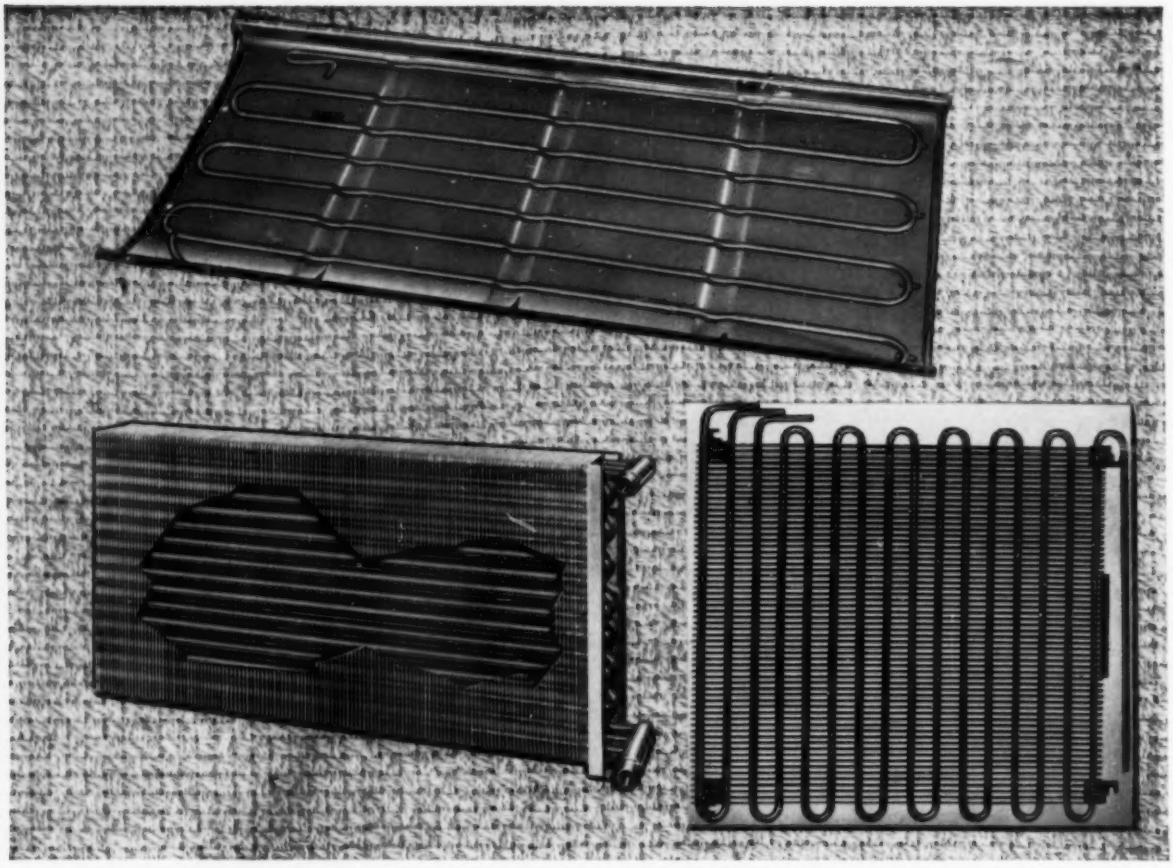
THE McGRAW-HILL PUBLICATION OF WORLD BUSINESS INFORMATION

Chemical fibers—from huge new plants like this—push further into world markets—p14

Behind the Organization Chart

page 22

O.S.



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World Affairs

The World's Working Capital . . .

Any business needs cash working capital, and the business of the world's trade is no exception. That is why businessmen hear talk about the "international liquidity crisis"—the shortage of gold and hard currency reserves.

You will hear more talk if the recession does not end soon. Dramatic proposals for increasing reserves may fill the air in months to come.

The liquidity problem is deceptive. It does not seem acute right now.

Sterling—a major key to liquidity—is strengthening, and Europe generally is adding to reserves. The Indian and Japanese balance of payments appear stabilized. The U. S. A. is losing gold again (nearly $800-million worth in the first four months of 1958). The IMF still has nearly $1,500-million of uncommitted resources to aid its members.

But the reserve problem is more severe than it looks—and could become worse if the recession is prolonged. Some primary producing nations, particularly in Latin America, are not losing reserves simply because they have no uncommitted reserves left to lose. Instead they are running down physical assets; inventories of imported goods are dropping and goods themselves are wearing out. This cannot continue for long.

And the problem goes deeper than short-term losses.

A shrinkage of reserves relative to the volume of world trade has been underway for almost two decades. And distribution is more uneven—with Germany and the U. S. A. now holding nearly half the total.

There is nothing sacrosanct about any given ratio of reserves to trade. But the smaller the ratio, the less leeway nations have for coping with adverse swings in their trade.

At some point, inadequate reserves will slow down the expansion of trade. A few experts think that time has already come.

. . . And How to Build it Up

There is no shortage of long-range solutions—all of them difficult.

Raising the price of gold would increase the value of reserves. But it would be inequitable—favoring gold producers and nations with large gold hoards. It might even aggravate the situation by encouraging hoarding in anticipation of further dollar devaluations.

So far, the U. S. A. is adamantly opposed. (Though some economists believe a severe depression could change this attitude.)

Increasing economic assistance to less-developed lands would help increase liquidity indirectly. Commodity stabilization plans would help, too—but only by distributing wealth, not by increasing total reserves.

Making the International Monetary Fund more effective is most widely discussed. Merely increasing members' quotas would give them a bigger reserve cushion. But it would not necessarily make adequate reserves available to those who need them most.

The most radical suggestion is to convert the IMF into a kind of world central bank by pooling the members' reserves. This would provide a much wider world credit base, just as formation of the U. S. A.'s Federal

Turn the page for more WORLD AFFAIRS

Reserve System did within that country. But the economic and political difficulties might be insuperable.

The big weakness in all these schemes is that they involve a large redistribution of the wealth of richer countries—especially of the U.S.A. There is little likelihood that, under present circumstances, such a policy would be politically acceptable.

One way to avoid this problem: One or more groups of nations could pool their reserves in a central system. Europe, within the framework of the Free Trade Area, might be such a group, and pooling would increase the effectiveness of those nations' reserves by a factor of 10 to 12—without involving immediately a massive transfer of U.S. resources.

Record Year for Travel?

Nobody objects to one "massive transfer" of wealth—foreign travel. This month the "high" season begins, and it may make 1958 a record year.

Despite recession uncertainties, more Americans will be traveling. Their disposable income is high, and the new "economy" air fares appeal, as do special attractions such as Brussels and the Lourdes celebrations.

Europe, Latin America, the Middle East (especially Israel) will reap a record harvest of Yankee tourists, if first-quarter passport applications are a reliable guide. The Far East will receive fewer. Transatlantic ships expect 1-million passengers; the Atlantic airlines plan a 40% increase in flights, to carry 1.2-million. Pan American Grace Airways, linking the U.S. with South America, report a 30% rise in tour bookings. And American Express Co. just reported a 40% jump in foreign travel sales.

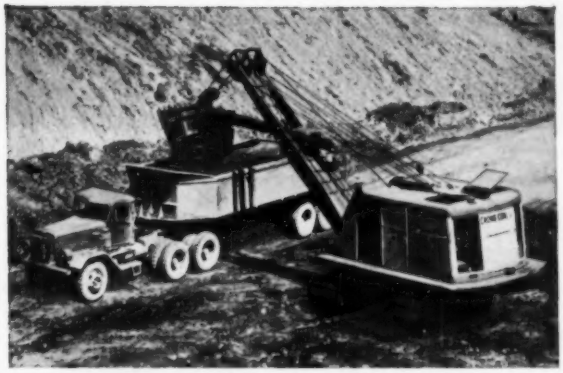
The Trends of Business

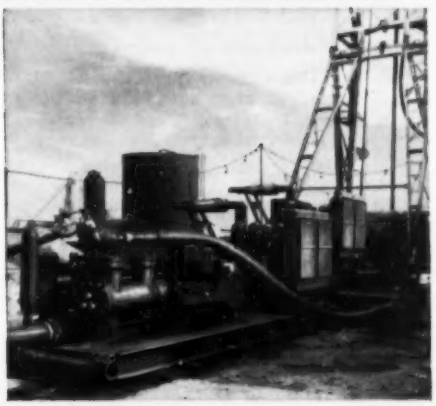
The big show at Brussels may be just what the economic doctors ordered for Belgium. The Fair should bring in about $600-million in exchange from an estimated 15-million foreign visitors. This will be welcome in view of Belgium's falling export earnings and higher unemployment. One worry remains: Will the sudden injection of Fair money inflate Belgium's usually stable price level?

World synthetic rubber output is expanding fast. Europe will be more than self-sufficient in synthetics when new German, Italian, French, and Dutch plants go on stream soon. Now Poland begins work on a 36,000 tons/year plant. Brazil, meanwhile, plans a 40,000 ton installation near Rio, and Japan will have a 45,000 ton plant operating in 1960.

Compromise is likely in the battle over the Reciprocal Trade Act in Washington. Eisenhower will not get a five-year extension of the Act, but the protectionists will not get their restrictive amendments either. So look for a straight one-year extension, with the battle renewed in 1959. . . . American lead and zinc producers may not get all the protection they seek. The President will probably accept the lower of two tariff increase recommendations, and refuse to impose import quotas on foreign metal.

Notes on the Recession: Mexico **raises tariffs 25% to 400%** on 2,400 products—mainly luxury items. Declining prices of Mexican raw materials, and a loss of reserves, are to blame. European producers will feel the restrictions most. . . . **A big U.S. buying syndicate,** representing 50 major department stores, says it is doubling its opening purchase orders for consumer goods in Europe—recession or no. . . . **Is this really necessary?** A British firm has developed a new kind of black carbon paper incorporating vertical strips of red ink—making it easier to type deficit items on the ledger!





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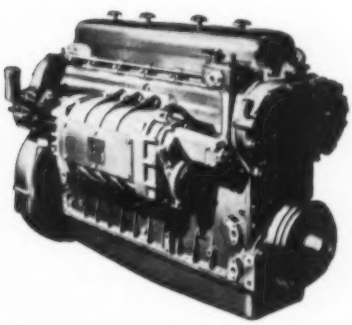

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International Management Digest

JUNE 1958
VOL. 13 NO. 6

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PICTURE CREDITS: Chemstrand Corp.—cover; Herbert Kratovil—pp 22, 23, 24; Wide World—p 11

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E. E. WEYENETH

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Executive, editorial, advertising and circulation office: 330 West 42nd Street, New York 36, N. Y., U. S. A. Donald C. McGraw, Chairman of the Board; Nelson L. Bond, President; L. Keith Goodrich, Vice-President and Treasurer; John J. Cooke, Secretary; A. R. Venezian, Vice-President and Circulation Coordinator.

Publication Office: 99-129 North Broadway, Albany 1, N. Y., U.S.A.

Subscriptions may be ordered through Subscription Manager (See below). Subscriptions to INTERNATIONAL MANAGEMENT DIGEST are solicited only from management men in business and industry. Subscription orders must indicate position and company name. Subscription rate $5.00 for 1 year; single copies $1.00 (U. S. currency). Second class mail privileges authorized at Albany, New York. Printed in U.S.A. © Copyright 1958 by McGraw-Hill International Corporation. All rights reserved. Reproduction of items in full or part without written permission prohibited in all parts of the world.

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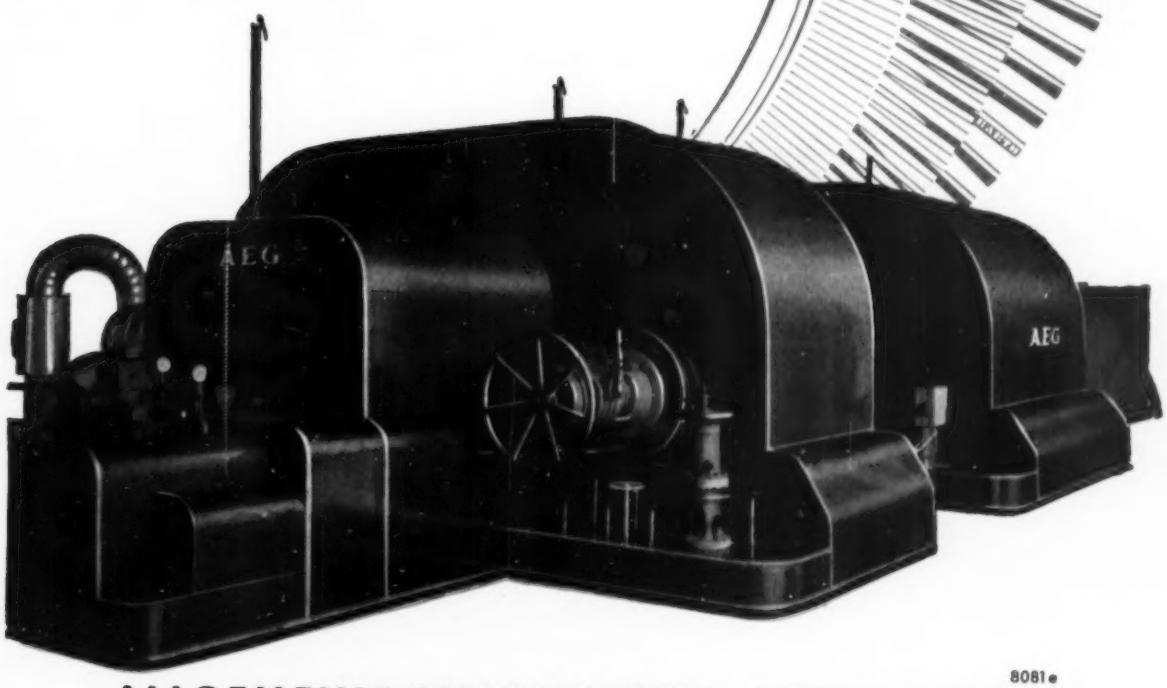

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ALLGEMEINE ELEKTRICITÄTS-GESELLSCHAFT

Berlin (West) EXPORT DEPARTMENT Frankfurt (Main)

NEW YORK CITY
JUNE 1958

The Readers Report . . .

Man & Management

Sir . . . My attention was drawn to the Editor's Page of February wherein reference was made to me. Let me express my warm appreciation for the kind sentiments you expressed . . .

Yes: The thinking minds of the United States are now considering how Science, even though it has created Superman, has still to solve the essential problem of man. Ultimately, it is the spirit of man that is more important . . .

Before concluding, let me take the opportunity to congratulate you on the high standard of your journal, and the distinct contribution it is making to the problem of management technique.

Dr. R. V. Rao

JOINT DIRECTOR
DIRECTORATE OF INDUSTRY & COMMERCE
ANDHRA-PRADESH, INDIA

Making the Desert Bloom

Sir . . . I found special interest in your February articles on Management Methods and Marketing. And I noted the leading article about the development of Iraq ["Trying to Escape a Primitive Past," Feb., p11].

If it is your intention to present samples of small countries which have effected large development, I think Israel must be among them. Many readers would be interested to get details of Israel's development in the last 50 years, and especially in the past 10 years. It is a classical example of changing a desert into a developed country within a very short period.

The inhabitants of Israel have increased three times during the period, and all of them were absorbed. We have not—as has Iraq—petroleum resources from which there flow millions of dollars, and our plans do not remain on paper.

S. Meitin

N. MEITIN & SON
TEL AVIV

● True—the development of Israel has indeed been impressive. But it is also true that Israel has benefited from the hundreds of millions of dollars supplied by Jews throughout the world—in the form of investment and outright grants. Israel has had another advantage: A highly-skilled industrial workforce and an experienced management community.—EDITOR

Slight to the Swiss

Sir . . . The managers of this factory and myself highly appreciate your publication. But we were surprised that you did not mention in your article "Come to the Fair" (INTERNATIONAL MANAGEMENT DIGEST, Mar., p16) the Swiss Industries Fair which took place in April. I suppose the fair must have been forgotten . . .

R. de Loes

TAREX, S. A.
GENEVA

● Our apologies to Switzerland. For reasons of space, we were forced to leave out several important fairs. —EDITOR

Compliment from the Swiss

Sir . . . We read with great interest the article "How Managers Can Manage Their Advertising" in the March issue. We would like to distribute several copies of this issue, for we believe that it ought to be read by all our clients, actual and potential.

Also, do you think we could obtain permission to reproduce the article in the next issue of "Informations Publicitaires," edited by the Swiss Advertising Council and distributed in industrial and commercial circles. . . .

J-Cl. Kramer

GEORGES CASPARI
GENEVA, SWITZERLAND

Labor Speaks

Sir . . . Many thanks for your cooperation and for a most understanding report on the international labor movement (IMD, May, p13). While there may be some points in your article on which I would take issue, nevertheless it is a top-rate effort in an area of world affairs still too unexplored by newspapers and magazines. You have done a pioneering job and my hat is off to you.

Arnold Beichman

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Sir . . . In enclosing my renewal order, I would like to tell you how extremely instructive I am finding your publication and congratulate you on the obvious contribution you are making to better management.

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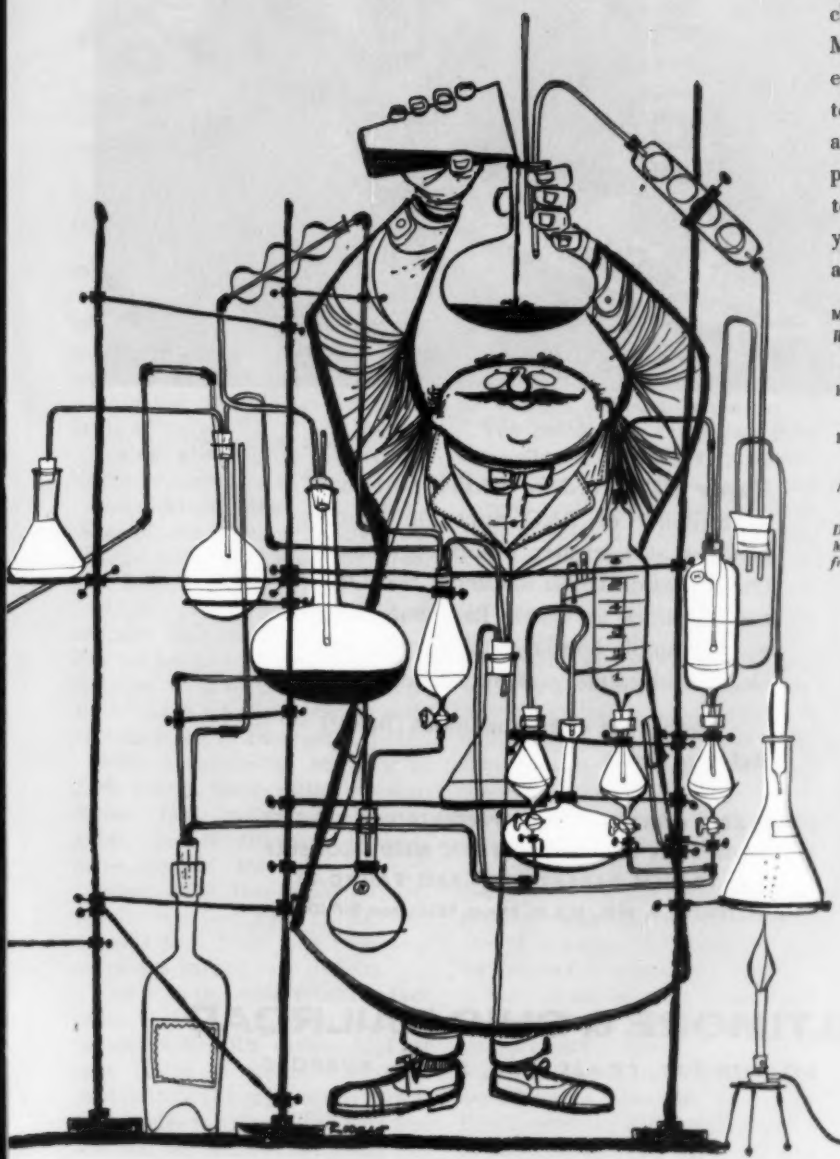

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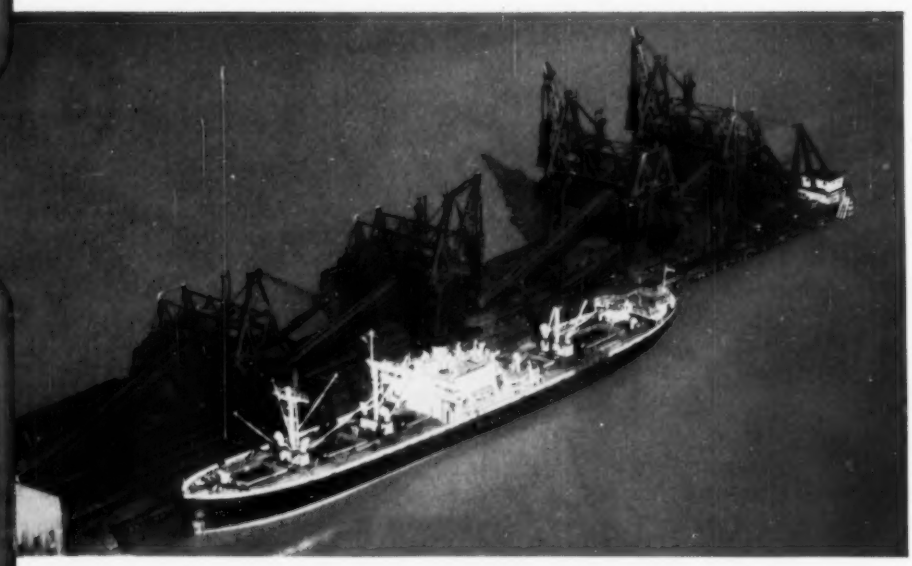

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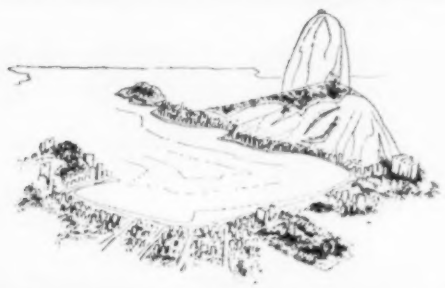


BRAZIL boasts an industrial boom, and has the new factories to prove it. But the coffee problem has brought the nation to a turning point.

Away from Coffee?

IN RIO DE JANEIRO, some outspoken economists say, "The bigger the coffee bust, the better for Brazil."

They are exaggerating perhaps. But what they are trying to say is true—that Brazil faces a critical turning point. They believe the nation must:

—**face up to a long term trend toward lower income from coffee.** It should speed diversification of exports, creating new incomes and cushioning the "boom-and-bust" cycle of coffee.

—**stop clinging to the coast,** hurry development of the interior.

—**undertake the unpalatable task** of simplifying foreign exchange rates, and reforming fiscal and monetary policy.

Hard economic facts have brought this new self-appraisal. For all its growth, and its attractiveness to investors everywhere, Brazil faces what may be its most serious crisis in the past 20 years.

With a population growing at 2.5% yearly, the pressure for continued fast industrialization is great. Industrialization demands more imports. But while imports climbed 34% last year, exports barely equalled 1956 levels, and Brazil's past trade and payments surpluses turned into deficits.

Coffee is the main troublemaker (page 12). It accounts for two-thirds of Brazil's earnings. Last year, coffee income declined 19%. And despite the prospect of a temporary rise in sales in the next few months, the 1958 coffee income will probably show another decline.

The drop in earnings hurts in other ways besides limiting essential imports. Repayments on foreign debts and the cost of freight, insurance, other services adds another $625-million to the bill. Fortunately, foreign investment in Brazil helps (over $300-million is expected in 1958), but much of it is in the form of machinery and equipment, which does not build up foreign exchange reserves.

The problem is compounded by the coffee price support program. Government support operations helped swell the budget deficit to 41,000-million cruzeiros in 1957; this year, the government will go deeper into debt, and more "printing press" money will stimulate an already chronic inflation.

Is there an answer? Few persons believe the present Latin American coffee agreement will help much. And you hear some observers say that, by holding an umbrella over coffee prices, Brazil just opens the way for new competitors. Confident that a more efficient Brazilian coffee industry could hold its own in the world market, these experts say Brazil should abandon its supports—and let prices fall where they may.

This is easier said than done. Meanwhile, the economists emphasize diversification.

A good start has been made—especially in minerals. Last year Brazil exported $100-million worth of ore (manganese and iron) and the government is now encouraging development by offering better terms to mining companies.

Brazilians believe, too, that they have a promising future exporting manufacturers. But before such a business can really grow, Brazil will have to revamp its entire approach to exporting. Price inflation, the growing domestic market, the frustrations of a complex and confiscatory exchange system discourage businessmen from building exports. One frequently-mentioned prescription: The government should clean up the exchange system, move to a single adjustable cruzeiro rate — with coffee pegged at first, and later worked into the system.

Brazil's very success in industrializing puts many strains on the economy. In many lines—chemicals, steel, drugs, machinery, vehicles—the nation is building an industrial plant that will reduce the import bill. Yet it is almost a truism that fast industrialization creates more needs than it can satisfy. Thus auto-making, for example, demands more steel; more heavy roadbuilding equipment; more petroleum products. In fact, oil is the largest single drain on the nation's resources.

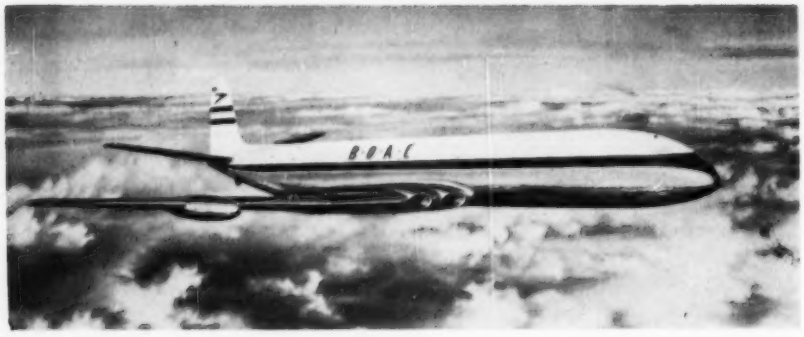
Petroleum is just one of the reasons why Rio planners urge a faster development of the hinterland. They hope that if Brazil gets "off the beach and into the bush," present resources will be better utilized, and new resources will be tapped.

This is for the longer-term, of course. In the present atmosphere, complicated by a raw-material recession throughout the Americas, Brazil counts on help from the International Monetary Fund, and from the U. S. A.

Chances are good that Brazil will get the help. The nation's economic future commands the confidence not only of its own business community, but of businessmen throughout the world. Private investment continues to flow into the nation, gambling that, for all its troubles, Brazil is indeed the "country of tomorrow." (*Business Week, Apr.26,p108*)

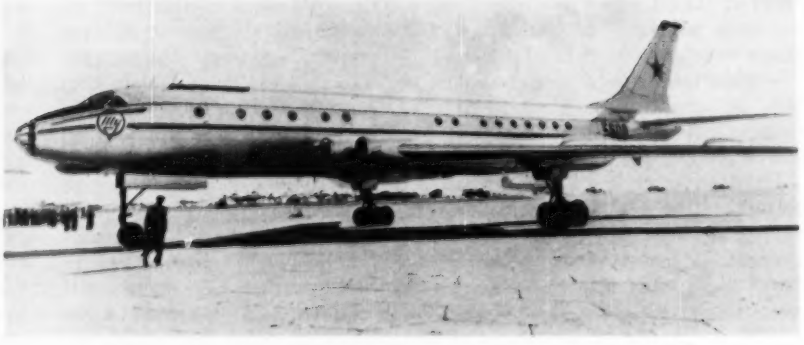
Enter the Jet Age—Costly, Competitive,

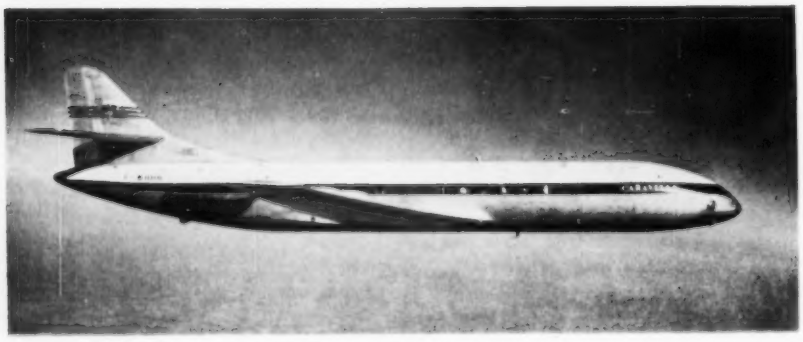
Boeing 707 ➔
first U. S. transport jet, hopes to begin Atlantic service in 1958 — 6½ hours, New York to London. Carries 120 at 575 mi. per hour. 161 planes have been ordered by airlines.



➔ **Comet IV**
smaller and slower than the 707, may be Britain's entry on Atlantic this year. Carries 76 at 500 mi. per hour; maker has 31 firm orders from world airline industry.

Tu-110 ➔
carrying 100 plus heavy cargo, is new four-jet version of Russia's pioneering Tu-104. Soviets already serve 16 nations, now hope to expand international routes.





➔ **Caravelle**
is French, cruises at 500 mi. per hour carrying 70. Commercial flights begin in 1959 and Sud Aviation, its manufacturer, has orders for 25 and options for 35 more.

and Booming

LATER THIS YEAR, the jet transport age officially begins—officially that is for airlines other than Russia's Aeroflot, which has been operating, and publicizing, a costly jet service for almost two years. Now, a race is developing between British Overseas Airways and Pan American World Airways to be first on the prestige-laden Atlantic route.

But along with the prestige, and the prospect of faster business and personal travel than the world has ever known, comes trouble.

International air transport becomes more competitive every day. Costs in the air and on the ground are rising drastically. And the problems of air traffic control, underlined by the latest air collision in the U. S. A., loom larger.

Air carriers face steady increases in costs of fuel, other materials, salaries—to say nothing of the planes themselves. Twenty years ago a DC-3 cost $125,000. Today's big airliners cost $2-million or more. The jets range up to $6-million. American airlines alone have placed orders for planes that will cost $1,750-million, and must spend another $250-million on special ground facilities. (How will they pay? Loans from insurance companies, depreciation funds, cash deposits amount to $1,400-million; $600-million has to be raised—perhaps in an equity market that, in the U. S. A. at least, is becoming quite cold to airline shares.)

These expenses come at a time when airlines are already struggling with a steady fall in profits. Many state-owned lines operate in deficit, many private lines must receive subsidies. The profit margin of U. S. airlines last year was 1.57%, down from 7% five years ago. World-wide, average airline profits are no more than 1%.

Costs, competition, even nationalism enter the airline picture. There is a constant increase in the number of airlines. Noting this, a British official recently argued that new small national airlines, all determined to fly international routes, serve neither the passengers nor the cause of competition, and are often too-expensive luxuries for the smaller developing economies.

Many governments are going to find it difficult enough to provide airports for the jet age. Few yet have runways long enough for fully-loaded jet transport planes, nor do they have adequate terminal facilities and means to handle jet blast and noise. Thus, for example, London Airport should invest another $47-million in facilities that have already cost $72-million; Swissair worries about Kloten Airport at Zurich, where last year a public referendum voted against spending for new jet maintenance facilities.

The jet age will not wait, despite all the difficulties. The airline industry asks only that fares be allowed to rise in line with other costs. Otherwise, more lines will go into the red, more government funds will have to be applied.

Certainly the business is there for the future. The U. S. airlines expect to be carrying 66-million passengers in 1961, up from 49-million in 1957; KLM carried 920,000 last year, expects 2-million by 1961; Japan Air Lines predicts an increase of 20% this year—and so it goes around the world. ●

A World on Wheels

HOW MANY AUTOS, trucks, and buses on the world's highways?

In its new annual survey, *The American Automobile* puts the total for 1958 at 107,242,748, up 5.6% over 1957. Outside the U. S. A., the gain is 10%—and might have been more if so many new vehicles had not gone to replace old ones. The big output of 1947, the first large postwar auto year, is now beginning to wear out.

Last year, manufacturing and assembly plants in 40 countries produced almost 13-million cars, trucks, and buses. Germany expanded its leadership in car exports—shipping 502,241 units abroad, followed by Britain, France, and the U. S. A. a poor fourth. In commercial vehicles, the U. S. led.

What about this year? Today's weakness in the U. S. motor industry should make no appreciable difference to foreign auto makers. Their sales will continue to grow—though perhaps not at the boom rates of the past three years. ●

Lobo: "King" of Sugar Trading

JULIO LOBO (above) is a Cuban businessman who at 59 has made himself the "king" of sugar.

Working quietly and swiftly (Lobo is known as the "lone wolf"), a Lobo company recently bought—for $24.5-million—big properties from Cuban Atlantic Sugar Co.

There was little public notice of the deal. But among sugar traders there was concern. For in a closely-regulated market, a man with even a small share of production can have tremendous power. And Lobo's recent purchase has given him three more mills (11 in all plus interest in several more), 7% of Cuban raw sugar output, and refining facilities to produce 30% of the island's refined sugar.

Julio Lobo is one of that unique species of international businessmen who operate alone, shun publicity, and rely exclusively on their own wits. He has a passion for work, and despite several heart attacks rarely passes responsibilities on to subordinates. The Americans tend to call such a man "an operator," and it is in commodity trading—especially regulated trading—where a shrewd operator can exert great leverage.

Sugar is a good example. Cuba, the world's largest producer, sets quotas for its growers. The U.S.A., world's largest consumer, regulates its supplies, both domestic and imported.

Cuba has half a dozen quotas for its producers, assigning sugar to various world markets. This year the island will produce about 6.2-million tons, export 95% of it, 43% to the U.S.A.

The U. S. quota system is based

on consumption estimates. For 1958, the figure is 8.8-million tons, with nearly 3-million tons allotted to Cuba. This system isolates the U.S. sugar from the world price, and has meant that less sugar is sold on the open market.

Yet the price of all U.S. raw sugar, freely marketed or not, is based on prices recorded at the Sugar Exchange in New York, the world's leading trading center for sugar. The roughly 2-million tons of open market sugar that pass through the exchange set the price for the rest of the U.S.A.'s 8.8-million tons, and have an influence on the free sugar price everywhere. Any trader who controls a sizeable portion of that 2-million tons is a crucial factor in the industry.

Lobo is such a factor. Lobo's sugar trading house in Havana is the world's largest. Its U.S. agent markets (in addition to a good part of the Cuban crop) at least 30% of all Philippines sugar that reaches the U.S.A., and about 60% of the Puerto Rican crop sold there. Lobo also operates through two firms that deal mainly in futures. Traders say that he is the supreme speculator of them all.

The recent purchase has stimulated charges from Lobo's enemies (and he has made some in his rise) that, in violation of U.S. anti-monopoly laws, Lobo sells directly or indirectly 60% of all the Caribbean sugar marketed in eastern U.S.A. Whether or not that is true, there is no doubt that his influence is great—not only in the Caribbean but internationally.

Lobo would like to use his influence to modernize the Cuban sugar industry. "Our future lies in increasing consumption, not in restricting production," says Lobo. "We must have a broad research program dedicated to improving our crop. There is also much to be done in non-food research—bagasse, furfural, and plastics. We must meet the challenge. We must modernize or die." (*Business Week, Apr.* 19, *p*138) ●

Trouble in the World's Coffee Cup

COFFEE is now the third-ranking item, behind petroleum and steel, in international trade turnover. Little wonder then that this month, businessmen are taking a careful look at the trouble brewing in the coffee economy.

Coffee troubles come at an inopportune moment. Indeed, the problems of Latin American producers are enough to have caused U.S. government officials to talk publicly, if reluctantly, about the possibility of Washington's cooperation in a world coffee stabilization program.

Economists at the U.S.A.'s Chase Manhattan Bank describe the coffee economy as one "where there has been a steady growth in demand and an erratic growth —at a generally slower rate—in supply." The result has been a wide variation of prices around a rising trend—of about 15% yearly.

Despite controls (such as Brazil's—page 9), the coffee market is "normal" in the sense that laws of supply and demand operate as one would expect. When frost or drought cause a drop in the expected harvest, the market pushes quickly upward. Where there is a glut, prices move down.

Today, a large surplus threatens. With favorable weather, the 1958-1959 crop may climb as high as 50-million bags, against world consumption of perhaps 37-million bags this year.

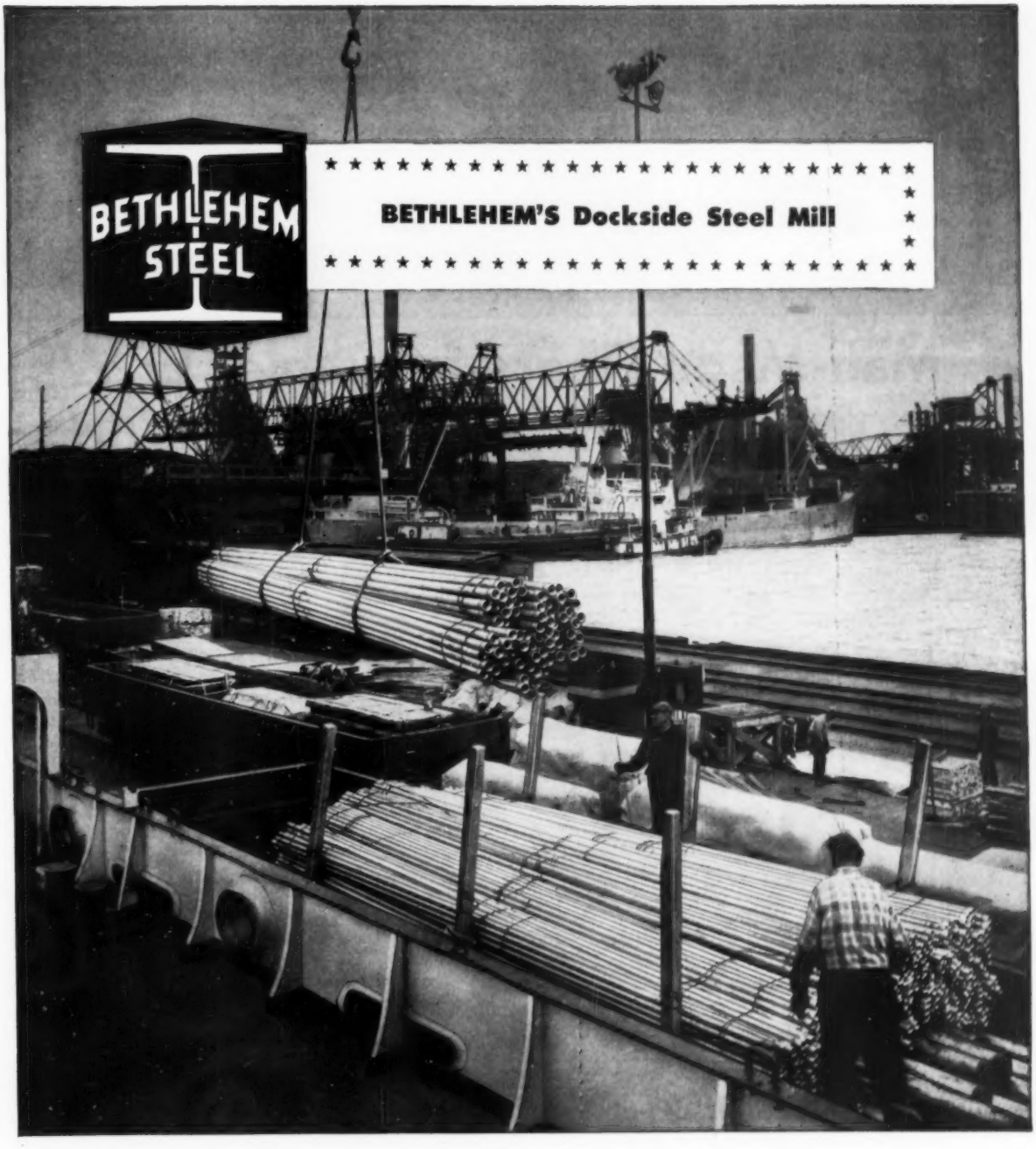
Partly because of Brazil's coffee policies, prices in the past few years may have been higher than they otherwise would have been. This has helped stimulate new planting in parts of Latin America, and especially in Africa, where coffee can be grown cheaper and faster. As a result, African coffee exports have soared.

Assume that world demand rises about 4% yearly. Thus supply should rise an average of 4% if prices are to remain stable. Supply lagged in recent years—and prices increased. Now, an 8% supply increase looms.

Can the Mexico City Agreement, under which leading Latin American producers agreed to withhold coffee exports until September, maintain prices?

Most observers doubt it, especially since the Africans refuse to cooperate. Now all eyes are on the U.S.A., world's largest coffee consumer, wondering if it will agree to some kind of stabilization plan with direct controls.

No such program is likely soon. But the fact that high officials now say that they are ready to sit down and talk about coffee problems places a stabilization scheme within the realm of possibility. ●



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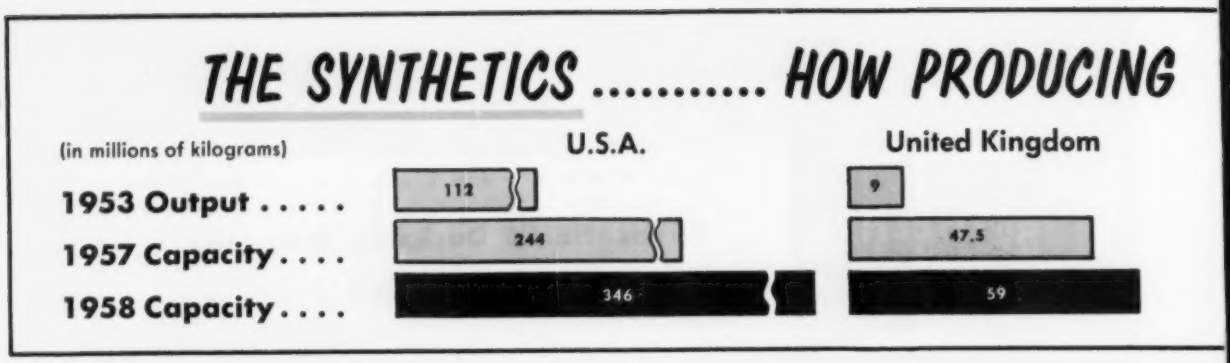
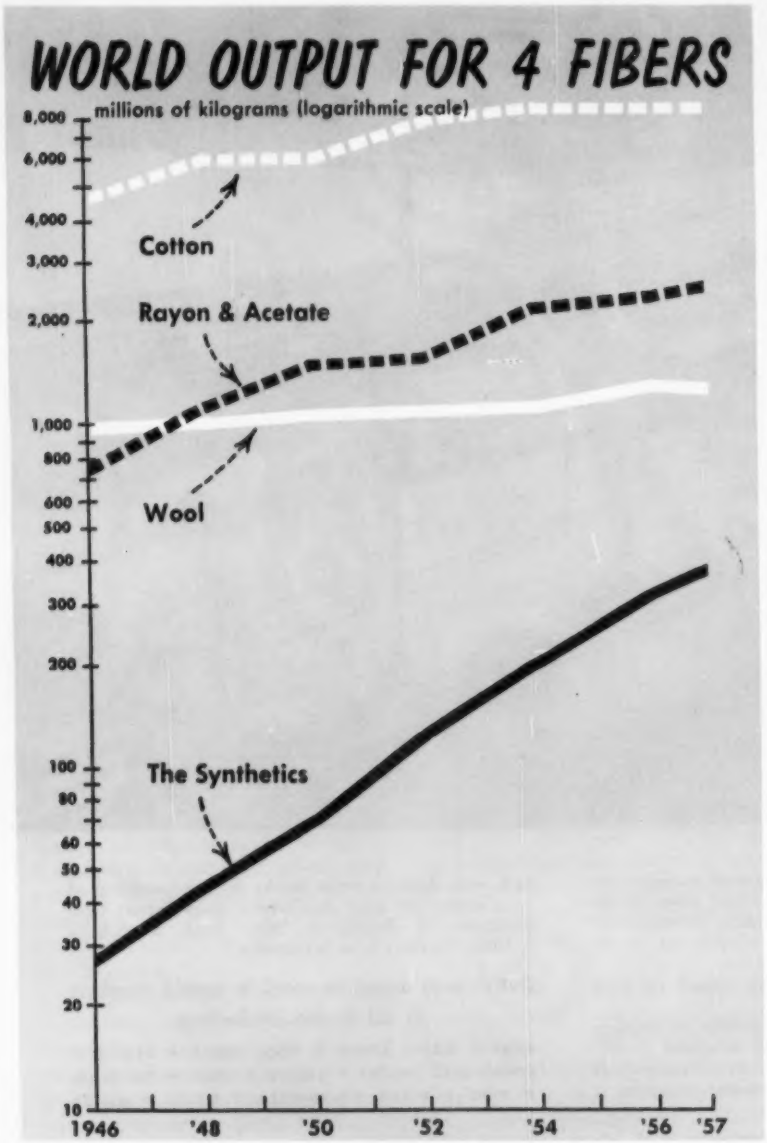


Man-Made Fibers Scramble for World



SYNTHETIC use rises rapidly—in a curve that could overtake rayon or cotton.

WORLD PRODUCTION of man-made fibers has nearly doubled in the past five years. But that is only part of the story. During the same period, a dozen or more new names have been added to the armory of fibers designed for consumer and industrial use.

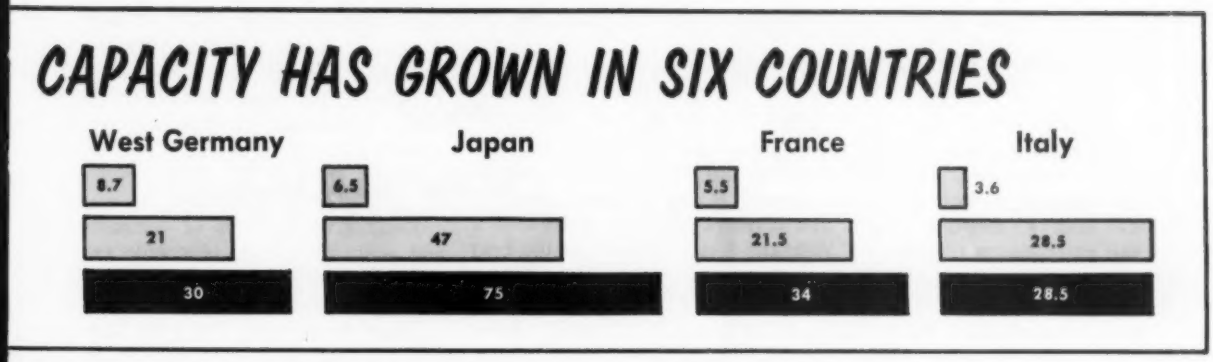
From Italy has come Moplen, from Japan Urylon, from the U.S.A. such exotic labels as Acrilan, Darvan, Fiberfrax, and Zefran. And through licensing agreements and overseas manufacture, these and other fibers are quickly "internationalized."

How internationalized can be seen at Brussels: All U. S. guides are wearing Acrilan uniforms.

This inventiveness is not greeted enthusiastically everywhere. For producers of natural fibers, and even some of the synthetics, the new names mean only new competition. This is especially true in a time of business recession in the U.S.A. and business uncertainty elsewhere in the world.

In the U.S.A., several large rayon producers have cut back output, sometimes to make room for new synthetics of their own. In Japan, an industry crisis has emerged this year as the world rayon market has tightened. Many Japanese mills have cut production by 30%, and there have been some shutdowns and layoffs.

Clearly, the advent of more miracle fibers has not been an unmixed blessing for textile management. New fibers have meant new problems, changes in plant and equipment. Each fiber has its own properties, and each makes special demands on milling, weav-



Textile and Industrial Markets

ing, as well as dyeing techniques.

Despite all the difficulties, new fibers will continue to move from laboratory into the market—and many will be commercially successful. The reason: No fiber has all the specific properties desired by the user. Each represents a nearer approach to the ideal. The synthetics, for example, normally outlast natural fibers, provide more covering for less weight, dry quicker, offer better resistance to heat and chemical action.

Looking into the crystal ball, it appears certain that cotton and wool will have to make a place for some of the new man-made fibers, as they have for rayon in the past 10 years (chart left). Rayon also will lose ground in respect to other man-man fibers. But the natural fibers and rayon will still be much in demand for many years to come.

Cotton and wool today command some 77% of the total world fiber market (compared to 88% in 1946), with cellulosics accounting for 20% and synthetics the remaining 3%. But the picture is constantly changing. Experts guess that in another 20 years the spread might be more like this: natural fibers, 50%; cellulosics (rayon and acetate), 25%; synthetics, 25%.

Here is where the important man-made fibers stand today. For simplicity, they are divided into three groups: (1) the cellulosics, including rayon and acetate; (2) the established synthetics; (3) various newcomers.

I. Rayons and Acetates

First on the scene, viscose rayon still retains the prime position among man-made fibers. Rayon is cheaper than cotton, and it is the closest to cotton in textile properties. Also, yarn mills that have switched from cotton to rayon have cut processing costs substantially.

Rayon's biggest outlet in the industrial market is for tire cord, followed by belting and hosing; for several years now, rayon has been fighting nylon's advances into the tire field. In rayon's favor, according to its producers, is its low cost, non-thermosetting properties, high heat resistance.

Manufacturers of rayon are making a determined effort to further improve rayon properties, looking toward broader applications in both the textile and industrial markets. The main emphasis is on development of higher-strength yarn. New high-tenacity rayons are expected to go into tenting, V-belts, and fire hoses.

Another hope for rayon producers is in spin-dyeing of fibers, a process developed in England some years ago and introduced into the U.S.A. after World War II. U.S. rayon producers today supply spun-dyed viscose staple in a wide variety of colors, and for many uses, including carpets. The process has stimulated renewed demand for rayon in women's apparel.

Textile demand for acetate—the other major cellulosic fiber—has also dropped in recent years. In the U.S.A. production reached a peak of about 200 million kilograms in 1950, but it has been sliding down steadily and now stands at about 120 million. One large American firm discontinued acetate staple production last year to concentrate on two promising new synthetics.

The true synthetics are made from chemicals derived from coal, gas, and oil. Though the U.S.A. makes about half of the world's supply, some 20 other nations participate in production. Japan, which in 1950 produced about half a million kilograms of fiber, was producing some 30 million kilograms by 1956. Producing capacity was increased in 1957 to 47 million kilograms, and this year to 75 million.

II. Established Synthetics

Four types of synthetic fibers have established themselves commercially in the market. Technically they are known as the polyamides, acrylics, polyesters, and vinyls.

Nylon—the principal polyamide—today ranks second only to rayon in man-made fiber production. Two major types of nylon are produced. Nylon-66, developed by E. I. du Pont de Nemours & Co. some 20 years ago, was the first polyamide marketed and accounts for much of the supply. Through Du Pont subsidiaries and licensees it is produced in Japan, Latin America, and Europe. Nylon-6, known as Perlon in Europe, originated in Germany but today is produced in other countries. Caprolan, made by the U.S.A.'s Allied Chemical & Dye Corp., is the one version of nylon-6 that is winning growing acceptance as a tire yarn.

A polyamide of great promise, **Rilsan nylon-11,** has been recently developed in France and perfected in Italy. After extensive use in these two countries, it has been introduced into Brazil and is being

". . . a Japanese fiber which is lighter than Dacron and has a melting point higher than nylon."

studied by American manufacturers. It is made from a polymer derived from castor oil, and has the lowest specific weight of any polyamide and a melting point lower than nylon-66 or nylon-6.

Nylon has an enviable place in the highly competitive textile market. The renewed demand for soft fabrics has favored nylon sales. Also, new nylon fibers have developed to further secure nylon's position in women's hosiery. Meanwhile, nylon is making a strong place for itself in carpet manufacture and in varied industrial uses —especially in tires.

Other industrial uses for nylon include fabrics for truck covers, sports arena covers, tow and mooring ropes. In marine applications, for example, nylon proves more economical than manila fibers because it is stronger, lighter, more resistant to rot and salt water.

Acrylic fibers have been moving fast since their debut in 1950. Most of the activity in this field has been in the U.S.A. DuPont's **Orlon** soon was followed by Chemstrand Corp's (a joint venture of Monsanto Chemical Co. and American Viscose Corp.) **Acrilan,** and both have found acceptance in knit goods and other apparel. Acrilan is becoming duly "internationalized"—with two license agreements just concluded with Japanese and Italian manufacturers, and a new Acrilan plant is going up in Northern Ireland.

Meanwhile, **Dynel**, developed by Union Carbide Corp., has found promising markets in high-pile fabrics such as synthetic fur coats and collars.

Fast on the heels of these three are several new acrylics, each with its special properties and potentials. Dow Chemical Co. has come forward with **Zefran**, termed a "nitrile alloy". The fiber has an affinity for dyes, and blends well with both natural and man-made fibers. It will appear this fall in women's skirts and men's suits.

Verel, a modified acrylic developed by Tennessee Eastman Co., recently made its debut in U.S. retail stores in the form of men's socks, sport shirts, and other clothing items. According to its producers, the fiber has twice the moisture regain of other acrylics, and displays excellent whiteness, a pleasant feel, and controllable heat shrinkage.

Next spring these acrylics will be joined by a sixth, **Creslan**, made by American Cyanamid Co. Dyeing properties are claimed to be better than other acrylics, and the fiber is said to have good strength, resistance to fire and acids.

The polyester in commercial use originated in England (Imperial Chemical Industries) as Terylene; DuPont manufactures it under the name **Dacron**. The fiber is in short supply in the U.S.A., Canada, and Europe. The volume use is in blends with wool and cellulosics.

Blends of Dacron—with 35% cotton or wool—found quick acceptance in men's and women's clothing. Dacron fabric dries quickly, requires no ironing, and holds creases well. Dyeing the fiber requires particularly accurate control, and dyes of Dacron blends have not always proven fast in dry cleaning. Du Pont is campaigning to get mills to adhere to recommended amounts of synthetics in these blends.

Now, two new polyesters are to join Dacron. Tennessee Eastman has been producing experimental quantities of a product they call T-900. In Puerto Rico, Beaunit Mills Inc. next year will begin producing a fiber derived from a polyester supplied by U.S.'s Goodyear Tire & Rubber Co.

A fourth fiber group—the vinyls —also have established themselves commercially in the U.S.A., Japan, Canada, and Europe. They are strong, durable and possess a high degree of resistance to weather, light and chemicals. Most of production goes into non-clothing uses: awnings, carpets, home and office furniture. The material's ability to resist fire makes it especially desirable.

The picture on the cover shows a portion of the world's largest integrated nylon plant—owned by the U.S.A.'s Chemstrand Corp., and located in Florida. Chemstrand has just increased the plant's capacity for the third time since its first shipment in late 1953—to over 51-million kilos of nylon filament yarn yearly.

III. The Newcomers

Besides the quartet of commercial synthetics, there is a wide array of chemically-derived fibers under development or testing.

Glass fibers have come up fast and are finding a wide variety of industrial applications: boats, sport car bodies, tanks and pipes, missile parts. Though not marketed for apparel purposes, they are being used in the U.S.A. more and more for curtain material, the result of new techniques in coloring and finishing.

Two important fibers have been developed in Japan recently. Already in production (about 13 million kilograms in 1957) is a fiber made from **polyvinyl alcohol**, which is said to be highly water-resistant and to present no dyeing problems.

The other Japanese fiber is **Urylon**, made by Toyo Koatsu Industries. Based on a product of nonamethylene diamine and urea, the fiber is said to be lighter than nylon or Dacron and to have a melting point higher than nylon. A Urylon plant soon will begin producing an initial 950 kilograms per day.

Montecatini of Italy recently has gone into pilot-plant production of a fiber using **Moplen polypropylene.** It is supposed to be low cost, but the true promise of the fiber will be known only after extensive testing and market avaluation.

Other new U.S. fiber developments include: **Darvan,** a fiber with a cashmere-like softness that has been under development of B. F. Goodrich Chemical Co. for several years; **Carbon Wool,** developed by Atomic Laboratories, Inc., which may go into protective clothing, blankets, cigarette filters, and a variety of industrial applications; **Teflon**, Du Pont's tetrafluoroethylene fiber, which has unusual resistance to heat and chemical action and is expected to find key industrial markets. ●

Digested from Chemical Week, Special Report, Mar. 8, p93.

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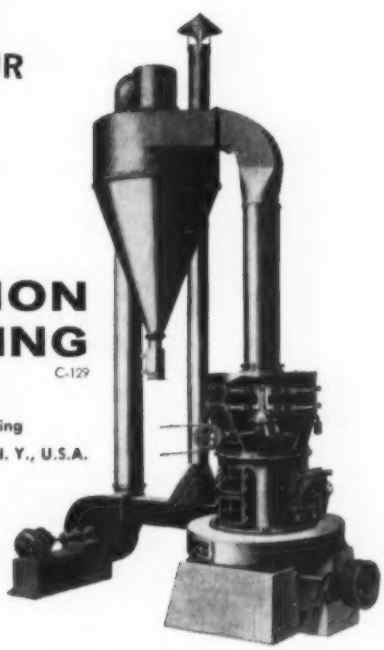

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How Businessmen Face a Recession

A recession means management action. Cost-cutting comes first, then retrenchment if necessary. The object is to be poised for an upturn.

WHAT DO YOU DO when business slackens off? Many companies have to face this question—during boom times as well as during a general recession.

Perhaps a recession can be defined as a period when an unusually large number of companies are faced with problems that an individual business might find itself faced with at any time. At any rate, how American companies are facing management problems these days should have lessons for business executives everywhere.

To begin with, it is well to differentiate between two words, each representing a management objective: "retrenchment" and "cost-cutting".

Cost-cutting, according to *Business Week* magazine, is what you do when volume stays reasonably high but rising costs are eating up profit margins. It can mean anything from introduction of more efficient machinery to warnings on executives' telephone charges.

Retrenchment, on the other hand, is an axe. When business is off and may stay that way for a while, fewer people are needed. Fringe departments and activities shift rapidly from the necessity class to the dispensable luxury class. Layoff of workers alone rarely meets the problem—for one thing, it leaves a top-heavy overhead structure that is costly when it is supported by reduced volume. So retrenchment slashes through a whole organization.

It is, of course, difficult to say where "cost-cutting" stops and "retrenchment" starts.

In a survey of top executives in the U.S.A., *Business Week* found a number of management men who flatly denied any plans for "retrenchment". As one president put his problem: "In terms of our current level of business, maybe we should cut. But if things are going to pick up in a few months, why should we break up a team, throw out programs that are important to us, and then scramble around trying to fill the empty holes in a hurry?" Such stands, *Business Week* concluded, are often publicly taken for psychological reasons—while serious reassessment goes on quietly within the privacy of the organization.

Evidently, many U. S. businessmen feel a responsibility to help maintain public confidence. Optimism, of course, is supposed to be a national trait of Americans, and there is currently a good deal of evidence that it is indeed a trait. One U. S. businessman embroidered a handkerchief with "Business is Good" and wore it in his breast pocket.

There is substantial evidence in the *Business Week* survey that plans for growth are the most immediate victims of retrenchment. Petroleum and mining companies, for instance, cut back on drilling and explorations. New plants ready to open are kept under wraps "until business picks up." Orders for new machinery are often spread out over a longer period, sometimes cancelled.

"Frills" such as fancy company publications—both internal "house organs" and externally distributed magazines—evidently have been among the first casualties. Extensive recruiting and company training programs have been disappearing—for the simple reason that there is less need.

Advertising programs come in for careful scrutiny. A majority of executives checked by *Business Week* insisted they were not cutting advertising budgets—some said they were increasing them. But the fact is that most magazines in the capital goods field—the area that is feeling recession the most—are carrying fewer pages of advertising. There is less "good-will" and institutional advertising. A prevalent attitude is summed up by the orders given to one advertising manager to "cut expenditures by 15%, but do it so it does not show."

Facing many managements is the difficult decision as to which activities are essential, just "desirable," or easily dispensed with.

A typical approach: One company ordered all department heads to submit plans for a 25% budget reduction. Then, instead of ordering the cuts, they requested the department heads to "voluntarily" get rid of the non-essentials.

Where the axe must swing, companies seem to be trying to do it selectively. The majority have tried to retain all essential functions, even if they have to reduce to a skeleton force. But the unskilled and the inadequate get short shrift. Those relatively few companies that have had to cut deep worry about finding—once business improves—the skilled people they have had to let go.

Perhaps the general approach is to let staff reductions take place by attrition—those who quit are not replaced. A few companies are "encouraging" more old timers to retire. A substantial number are freezing salaries—though such freezes are seldom officially announced—and a few have asked executives to take salary cuts.

In a report on the hard-hit steel industry, the *Wall Street Journal* says a favorite device for cutting down office staff payrolls is to cut out one day a week, at a proportionate 20% cut in pay. Some steel companies favor one hour off each day, at a 12% cut in pay.

Outside services are getting a closer look. Annual contracts for specialists and consultants are being cancelled in many cases in favor of special one-time assignments. One consultant says the U. S. recession has resulted in "a bit of down time" for him.

Management consultants also report a shift in the type of work they are asked to do. "There is considerably less interest in such things as organization planning,

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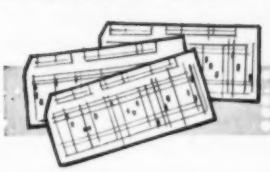

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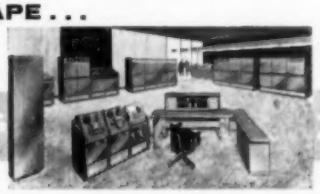

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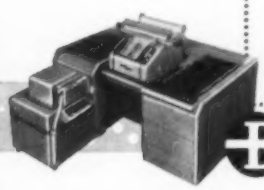

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management development, and automatic data processing," a consultant told the *Wall Street Journal*. "The big push now is on cost reduction and better marketing."

But another consultant told *Business Week* that company presidents are expressing interest in making fundamental changes in corporate structures — something that is hard to do when things are going well. Decentralization is coming on for closer scrutiny. Many companies now seem more interested in centralizing accounting and other controls, less in setting up autonomous units.

Consultants also notice increased interest in "efficiency" studies, in marketing studies aimed at getting more productivity out of each salesman, and in organization studies to consolidate work loads and to trim overhead (page 22).

In the marketing area, studies of new products and their potential markets are increasing. Spending on research and development may be trimmed in some companies that are especially short on cash, but it is being accelerated in the strong companies (page 2). And in the strong companies, there is increasing preoccupation with planning for the next three to five years—but some of the studies of the world 20 years from now are being put aside.

New products are pushed if they show promise of making a big enough "splash" in the market to generate a fast cash return, and if they make use of existing capacity and distribution channels. But unprofitable products are vigorously eliminated.

On the sales front, many companies are paying salesmen higher bonuses for meeting quotas, or reducing the quota percentage needed to earn a bonus. Everywhere, customers are getting more attention than they have gotten in a long time. Salesmen are making more calls, sales executives spend more time in the field.

What it all boils to is this: When business is bad, most businesses concentrate on cost-cutting first, rely on "retrenchment" as a last resort. The object is to pass through the slack period in as strong a position as possible, and be poised to move rapidly when there is a business upturn. ●

Purchasing: A Crucial Area in Cost-Cutting

WHETHER A FIRM has 40 buyers or only one, its purchasing office can —and should—be a major focus of cost-cutting effort. This is why the purchasing function has come in for increasing attention from management, and why the purchasing executive enjoys new prestige.

Look at the buying offices of Convair Corp., U.S. aircraft manufacturer. The attitude toward purchasing there is being duplicated by progressive corporations throughout the world.

The first thing a visitor sees is a savings chart—a kind of "honor roll" listing the major savings effected by purchasing men. For each of the past three years, these men have achieved savings of between $100,000 and $1-million.

Chiefly, the secret is one of right men and right methods. Convair has taken care to attract university-trained men to its purchasing department. Training is carefully planned, too: Management now encourages buyers to become specialists, because "by constant association various items become fixed in mind, and this increases the alertness of the man buying."

Convair's chief purchasing agent has several well-tried methods of cost-cutting. One of the most effective is to give three to five competent sources an estimate of yearly usage on several items and let them quote on the whole order. An "on call' purchase order is then issued on a yearly basis so that the purchasing department has only to call in the order and let the vendor invoice it. "We save around 6,000 purchase orders annually this way," says Convair, "and we also get the maximum discount."

Convair's cost-saving methods all call for negotiating ability and specialized knowledge, besides time and effort. Buyers are urged to:

1. Find similar or equivalent items at lower cost but in equal quantity.
2. Induce suppliers to take on jobs entirely foreign to them.
3. Persuade a company to use something already on hand to fill an order.
4. Negotiate; stimulate competition.
5. Seek out new methods, and material substitutes.

The largest individual saving ever made by one of Convair's buyers took almost a year of effort. By working with the manufacturer, the buyer improved an oxygen regulator so it would go hundreds of hours at a time compared with 10 to 12 hours previously. Management credited the buyer with a $1,200,000 saving.

Not all savings are as spectacular. But the following examples show how Convair's buyers put the savings "theory" into practice.

Similar or equivalent item— One of the best examples under this head involves industrial carpeting used in Convair's aircraft. Originally the carpeting consisted of a foam rubber pad topped with embossed carpeting; it came only in strips, and it was expensive.

Then Convair's buyer discovered another manufacturer able to turn out the carpeting in continuous rolls, and interested him in making the material Convair needed. With a few changes (made at the buyer's suggestion) the new carpeting was in some respects superior to the old—and 30% cheaper.

Material substitute — A change from cast aluminum plate to rolled aluminum prime plate was one of Convair's most successful purchasing coups.

Cast aluminum plate, made from secondary materials, is apt to contain foreign elements. And at the factory these would frequently turn up after 300 to 400 hours tooling had been spent on a piece.

It was Convair's purchasing agent who thought of changing to prime aluminum plate, rolled 7.5 cm thick. He found a producer who could supply it at about 45 cents/kg less than cast plate. The first order was for 27,000 kg. "Now," says Convair, "use of prime plate instead of cast plate is almost universal in aircraft plants." (*Purchasing Week, Apr 7, p20*) ●

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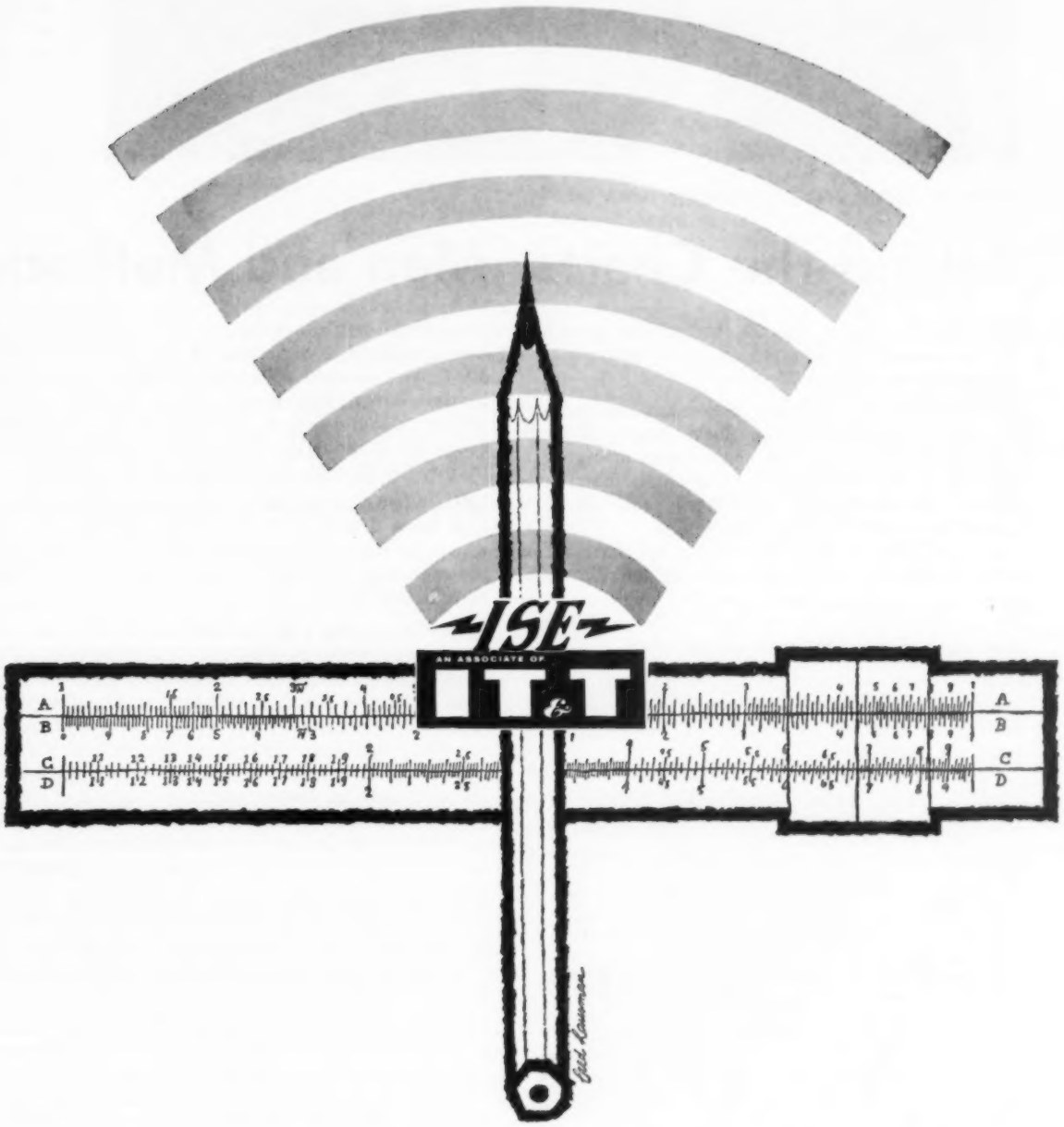

INTERNATIONAL STANDARD ELECTRIC CORPORATION EXPORT DEPARTMENT: 50 CHURCH STREET, NEW YORK 7, N. Y.

Urwick on Organization:

Behind the Charts, Men and Methods

IMD: Colonel Urwick, what is the first thing you look for in evaluating the strength and weakness of a company's organizational setup?

URWICK: First, I look at their organization chart. If it has a compact, balanced-looking pattern, that's a first indication they have some notion of organization. If, on the other hand, it's a widely distributed pattern—you have seen them, they cross about 18 inches of paper—I become suspicious.

Second, quite early I look at the age distribution of the executives. An unbalanced age distribution at any level is a sign of future trouble. Some day they are going to lose too many people too quickly, and they will not have replacements for them.

IMD: One of your fellow consultants—a Netherlander—has developed a method of charting functional relationships between executives, as well as their responsibilities. The idea is to get away from the military "chain of command" diagrams so widely used. Is this a step in the right direction?

URWICK: Personally, I don't agree. Armies have had three or four thousand years of experience with large-scale organizations, and business has not yet had a hundred. I've no fear of the military analogy. My first experience with organized life was with the British Army, and I saw more freedom allowed officers to exercise their initiative in war than I have ever seen in industry. It isn't the organization chart that makes rigidity, it is the way people behave.

IMD: When you look at an organization chart do you look for a firm line of distinction between the men who make the policy decisions, and the men who make the operating decisions? If they are one and the same man, is that good?

URWICK: I always look for distinction between making policy decisions, and managing operations. Frequently, and particularly in smaller businesses, they have to be done by the same people. But the people should know when they are doing one and when they are doing the other. I believe it works best if policy decisions are confined to a perfectly distinct time, place of meeting, and so on.

To a large degree, policy decisions in modern business have to be group decisions. But group decisions in operating usually lead to "group" organization.

IMD: But we are hearing a great deal these days, Colonel, about group decision-making, "democracy in industry," and "participative" management. Do you think there is really something called industrial democracy that works?

URWICK: If you try to translate the mere machinery of political democracy into a business environment you will get into the most frightful mess.

There are thousands of ways of giving people a sense of participation in what they are doing, besides asking them to make decisions they don't want to make. I knew a distinguished British businessman

LYNDALL F. URWICK is "dean" of the scientific management movement in Great Britain, and has an international reputation as a student of business organization and as an advocate of training in the art of management.

Now Chairman of the London consulting firm of Urwick, Orr & Partners Ltd., Colonel Urwick has given up executive work to devote more time to writing and lecturing. Recently, he visited the offices of IMD for an informal chat with the editors—and with our readers—about the problems of business organization in a fast changing world.

who, twenty five years ago, was doing things that the most progressive corporations anywhere are just now beginning to think about. He even had a grievance procedure by which his workers could protest over their boss's head. But he never loosened up for one minute on the obligation and duty of management to make the executive decisions.

IMD: Tell us, Colonel, do you find national differences between management men? Different kinds of organizations, different kinds of executives, as between the U.S.A. and Britain, Europe and Latin America?

URWICK: It seems to me that the biggest difference is in management sophistication. Take what we will choose to call a "backward" country. The attitude of its employers is very much like the attitude of employers in Great Britain or the United States half a century ago. They haven't yet really thought out management as an art and as a public responsibility.

IMD: What would you say is the greatest weakness of management organizations in these "less sophisticated" industrial communities?

URWICK: Paternalism. If you give your good jobs to your relatives, or to the man who marries your niece, you immediately discourage all the able young men who do not happen to marry one of your nieces. Consequently, executive development in any real sense of the word never gets going. It does not follow that the son of an able businessman makes a good businessman himself. In fact, in Lancashire they say "clogs-to-clogs" in three generations.

IMD: Colonel Urwick, many businessmen around the world are looking for ways to cut costs, to reduce their overhead expenses. As these businessmen look at their company's organization charts, what should they be looking for?

URWICK: Well, I would agree with my friend Peter Drucker, your American writer on management. The first thing is to make sure that every unit in your organization, as far as humanly possible, is making a profit for the organization, not just contributing to profit. That does not mean, however, that you are going to scrap all your functional departments immediately. I think one of the greatest dangers of the moment is what is known as "management by cost-cutting drives." Five or ten years from now, you might find that you threw out the baby with the bath water. On the other hand I am quite sure that there are a tremendous lot of organizational frills in industry.

IMD: Lately we have seen a great deal of research about the manager's job, observations and interviews to find out just exactly what he does with his time. Would you recommend such organization studies or time studies of the top manager's job?

URWICK: If you have a man who is being troublesome, or shall we say has grievances of his own, and you want to help him get on with the job, you do not want a time-study man sitting at the other end of your office while the fellow tells you about the trouble he has with his wife. You can't win his confidence that way.

On the other hand I am sure that the studies made in Sweden some years ago on eight top executives—a great deal of trouble was taken to find out how they distributed their time and so on—were of great value to our studies of management.

The first phase of management is analyzing and measuring the job. We have been studying the man at the bench for the last half century. But one of the difficulties is that the executive's job is never repetitive, as the man's job at the bench is.

IMD: How would you define the chief executive's role, Colonel?

URWICK: We forget that the chief executive does not spend all his time managing. I always use Pigors' [Professor Paul Pigors of the U.S.A.'s Massachusetts Institute of Technology] analysis of a leader's function: Representation, initiation, administration, and interpretation. So administration is only one bit of the job, and the others are much more time-consuming.

My experience is that the chief executive in business spends far too much of his time at his desk. He should be out of his office meeting people in their offices. A man is quite different if you stroll into his office and talk to him than he is if he comes into your office—when he is "on the mat" more or less.

If people don't see the chief executive—and I don't mean officially—they get the feeling that the administration is some impersonal machine which does not understand their problems.

IMD: Colonel, you talked about the chief executive's relationship with his own job in his own office. What about his relationship with the Board of Directors?

URWICK: The chief executive is the subordinate and servant of his Board of Directors, and his job is to carry out the policies which they have made. He should, I think, be a member of the Board in the building of those policies. That is to say: He is not

continued on next page

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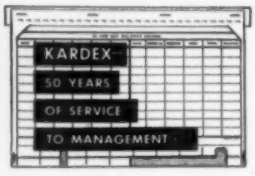

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URWICK begins on page 22

asked to do something to which he has not himself been a party.

Most delicate is the relationship between the chief executive and the Chairman. When I stopped being a chief executive myself and became a Chairman, my successor and I agreed that he would never, if he could help it, put up any proposal which he had not previously discussed and worked out with me.

Incidentally, our Board has one complete outsider who is a professional director. We find him terribly useful. Every now and then he smiles down the table and says, "Gentlemen, I haven't understood one single thing you have said in the last hour. Will you please reduce it to words the layman can understand."

IMD: As you know, Colonel, this is an age of rapidly advancing technology and new products. What should be the relationship of the chief executive with his creative men—research people, engineers, and the like?

URWICK: The man who produces new ideas is nearly always a wild man, a bit of a lunatic. Almost everything he does is anathema to the "faithful administrators"—the admirable citizens who keep the business ticking. He produces litters of new ideas which have to be drowned at birth by the administrator. But every now and then he will produce something—the pearl in the heap of oysters—that will save the company in five years.

Somehow or other the chief executive has to protect the men who produce new ideas from the faithful administrators. I feel the chief executive should have at least one assistant in the general staff office, or whatever you would like to call it, who is constantly alive

(Continued on p. 26)

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IMD: We hear of a number of companies, particularly several giant corporations in the United States, that have adopted a team approach to operating management in which the top authority is invested in a duo or in a triumvirate. How does this accord with your views on how management should operate, Colonel?

URWICK: One sometimes finds the team approach working successfully. But I personally don't like the idea because of the enormous difficulty of management succession. It is difficult enough to develop somebody to replace a chief executive; it is impossible to develop a pair to replace twins.

I believe it is much better to stick to the pattern of the defined leader, even if he is not as strong a character as you could wish.

After all, integrity matters—particularly at the high level—even more than ability. The ideal leader in many executive situations isn't a very forceful or even a very articulate character. He's a character, however, who is respected for his devotion to the job the corporation exists to do.

IMD: To sum up, Colonel. As the top manager looks at his organization, what are the four or five principles that he should keep in the front of his desk?

URWICK: He can ask himself six questions:

1. Am I distinguishing between policy and operation, and have I quite clear arrangements for dealing with both questions?
2. Am I thinking of long period or short period requirements? Have I separate arrangements for dealing with the two different time scales?
3. Have we defined our objective and the subsidiary objectives quite clearly?
4. Are there positions in the organization in which men can show leadership?
5. Have we sound means of releasing and using new thinking?
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In Management

● **"A GROUP can spark an idea,** but only an individual can have one. The way you make a creative man creative is to let him be creative."

That is the guiding philosophy of the U.S.A.'s Upjohn Co., a research-minded drug manufacturer. Upjohn allows creative personnel 20% free time, on the theory that a creative individual has a right to independent creation. Most of the eligible employees take advantage of the opportunity, reports *Printers Ink* magazine.

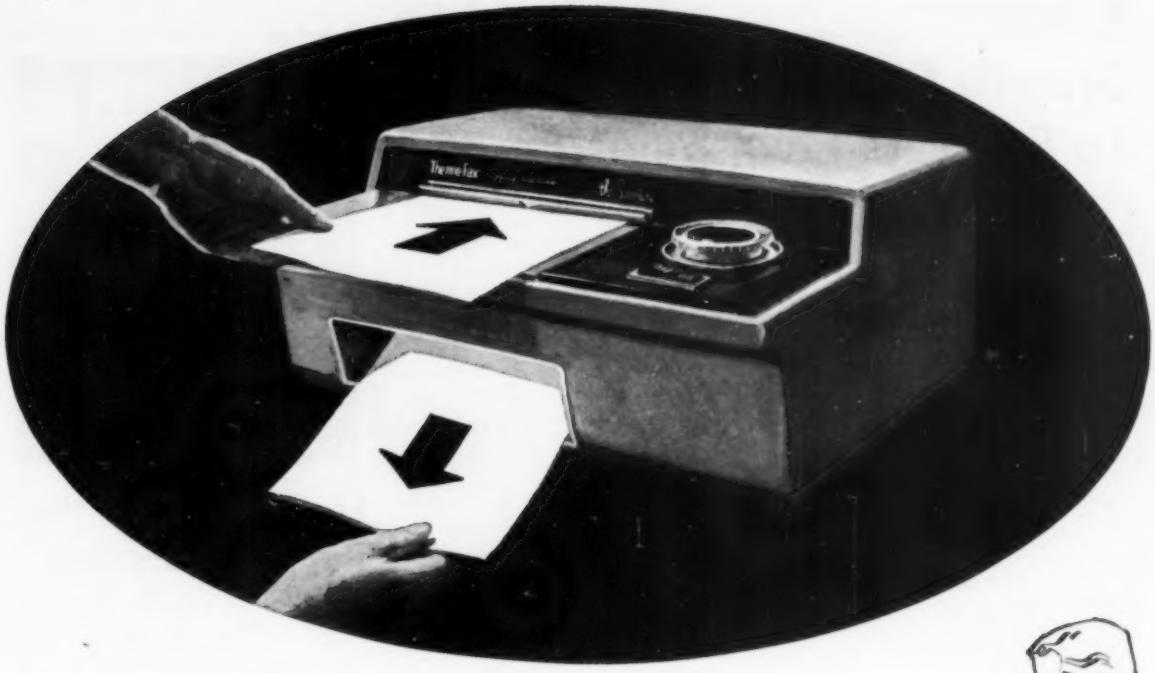
● **A PRODUCTIVITY COUNCIL** has started work in India. Largely patterned on a similar body in Japan (IMD, Dec. p14), the Council will concentrate on work studies in an effort to prove that mechanization does not create labor redundancy. Studies done so far show that better work methods have led to higher wages, shorter working hours, and better working conditions. The 33-member Council is composed of Government, labor, and employee representatives. Firms and individuals can become non-voting associate members.

● **TEMPORARY OVERCAPACITY** is the price of progress, a McGraw-Hill economist argues in *Challenge* magazine. "There is an increasing tendency on the part of progressive firms to accept lower operating rates as one of the costs of continuous development," he notes. New products often make old facilities not only redundant, but useless; and a lower operating standard provides a larger cushion for emergencies.

Many companies build general purpose capacity ahead of present requirements, then add specialized facilities as needed.

● **EUROPEAN COMPANIES** are preparing themselves for sharper competition in the Common Market. Typical of the trend is the recent exchange of equity shares—with Board representation — between German and French machine tool makers. Scheiss of Duesseldorf and Societe des Anciens Etablissements Charles Berthiez will pool their research facilities and coordinate output for great specialization.

● MARKETING



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Growth Forces Small Company To Form Its Own Sales Force

Digested from BUSINESS, April, p78

GROWING COMPANIES are familiar with the problem faced by Stanley Works (Great Britain) Ltd., makers of hand tools.

For 20 years Stanley had successfully marketed through an independent distributor, whose sales personnel were "keen Stanley men." But steady increases in production, demand, and product variety made Stanley aware of the need for its own sales force.

When the decision was made, the distributor was notified immediately—giving him 12 months notice instead of the six months required by the contract. In addition, it was agreed that the distributor would continue to sell Stanley products for 18 months.

The problem was more than just recruiting salesmen. Many of the retailers—though they sold Stanley products—knew little about the company. A dealer-relations program was launched even as salesmen were being recruited. News releases were prepared and sent to the trade press.

Stanley broke its 3,000 customers into seven territories—giving each salesman 300 to 400 customers. That would mean an average sales load of 35 to 40 calls per week—once a week for customers with a high-turnover, and once every two months or so for smaller ones.

Over 250 applicants answered Stanley's advertisements for experienced tool salesmen. Likely applicants were sent questionnaires; then about 50 were interviewed by the sales director at regional centers.

The sales director searched for men with a stable domestic situation, as well as sales experience, in the conviction that a salesman's wife must back him and his job completely—and he may be absent from home for a week or more at a time.

After appointment, the salesmen spent six weeks in a training course at Stanley headquarters. The company paid all expenses, including fares home for the weekend.

Practical work and demonstrations (each salesman performed some of the production tasks in each department) were alternated with lectures by senior staff men on company policies regarding advertising, product service, dealer relations, etc.

At the end of the course, the salesmen's wives were brought in, at company expense, for a dinner dance. The wives met the people their husbands were working for, and management met the wives. The next morning, seven new cars—packed with sample cases and supplies—were ready for the return home.

It was impressed on the salesmen that their first rounds would be in the interests of dealer-relations. First of all, it was necessary to explain to customers why Stanley decided to organize its own sales force, and that they had "done the right thing" by their former distributor. For some time, also, there would be the delicate problem of competition with the distributor. (In some cases, as a compromise, orders were alternated between Stanley salesmen and the distributor.)

The salesmen were told, "High pressure salesmanship is out." Stanley's first objective was to build long-term good-will. And, for the "good-will" period at least, it was decided to pay salesmen on a salary basis—plus use of the car and expenses. Meanwhile, management is studying bonus incentive schemes.

Postcards are sent to customers a day or so before a salesman will call. Each salesman carries a card file on each customer, showing the type and volume of Stanley goods normally bought.

Sales conferences are now held during slack seasons. Minutes are converted into a report—with comments by the sales director—for each salesman to study. ●

Luring Sales at the Point of Purchase

To consumer-goods manufacturers, the retail store is becoming a competitive battleground where they vie for space for their "point-of-purchase" advertising displays. Inevitably, a lot of display material ends in the retailer's wastebasket. And the marketing man who fares better is usually the one who understands this field.

The first job of "p-o-p" displays is to catch the attention of the consumer. One trend is the increasing use of motion (picture, above) and light.

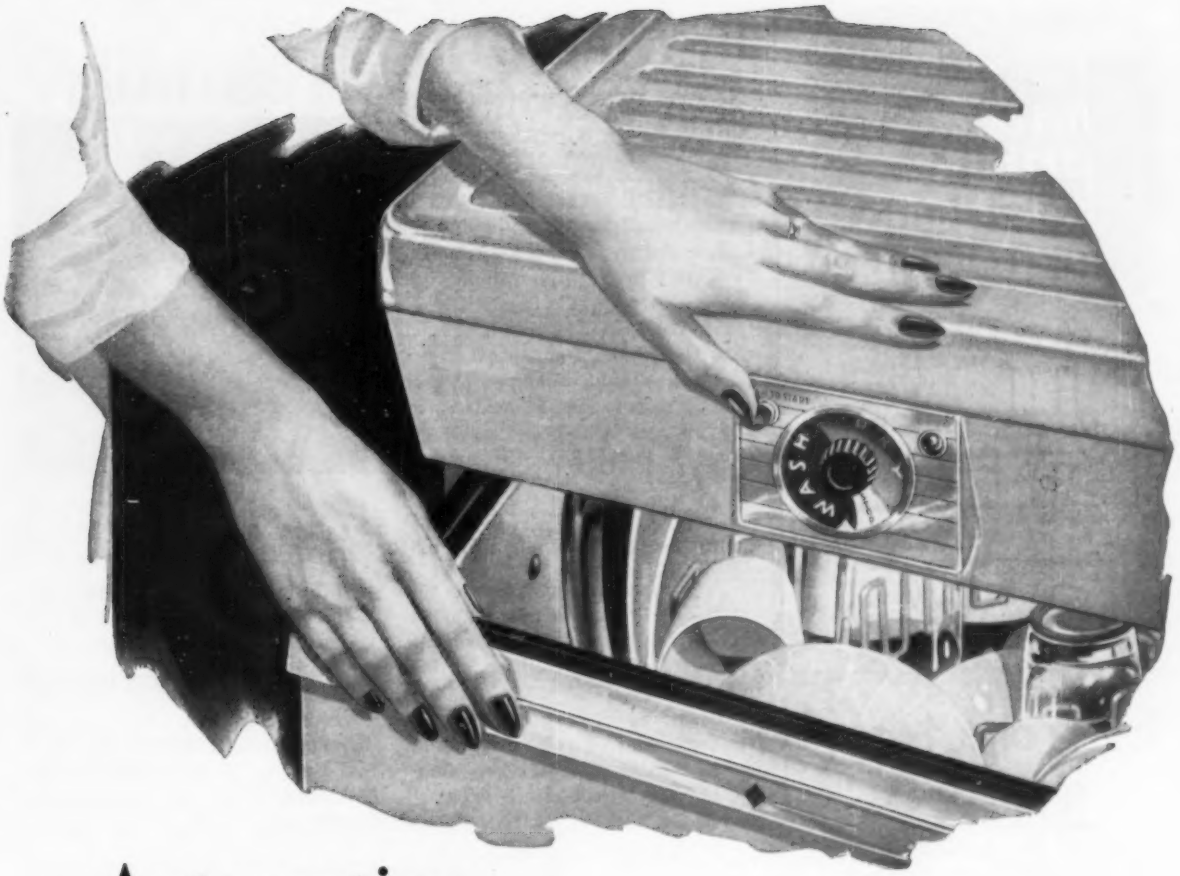
But with the increase in self-service selling, plus the use of fewer sales clerks, p-o-p displays are being called on to display merchandise where consumers can get to it, and to provide information on price, style, etc.

A maxim among p-o-p designers: Anything that takes the product off the shelf and displays it more prominently is welcome.

Temporary materials are favored because they are flexible and relatively inexpensive.

But there is much greater use of permanent display fixtures too. A trend is to provide the retailer with displays he can use for other merchandise as well (often the retailer pays part of the cost). "What the retailer wants," comments a display maker, "is a better selling method, not just a competitive tool." Companies usually get a better reception when they keep the retailer's problems in mind. (*Business Week, April* 26, *p*66)

In Marketing



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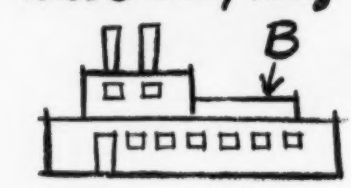

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American Air Filter
COMPANY, INC.
255 Central Avenue, Louisville 8, Kentucky
American Air Filter of Canada, Ltd., Montreal, P. Q.
AIR FILTERS—ELECTRONIC PRECIPITATORS—ROTO-CLONES
Cable Address: AMFIL

In Marketing

Single-portion package . . .

. . . may be the next marketing sensation. Recently introduced in Europe, Canada, Australia, and the U. S. A., its advantages include "low unit price, high volume, and customer intrigue."

Polyvinyl chloride tubing is filled with the liquid product (at right, Colgate's liquid shampoo), then each package is formed, heat-sealed, and cut on automatic machines. (*Modern Packaging, April, p*110)

Commercial television in Britain . . .

. . . has more than doubled its advertising revenue in less than two years—increasing, in fact, from the equivalent of $26.4-million in 1956 to $89.6-million last year.

About 30% of British homes are now in range of commercial television, reports the *Wall Street Journal*, but this percentage is expected to rise to 40% of British homes within range by the end of the year.

In contrast to the growth of television advertising, the nationally-circulated newspapers are experiencing a much slower rate of advertising growth. And soon, the increase in television coverage "will really begin to hurt the national newspapers," in the opinion of one London advertising agency man.

"Rotation bidding" on export contracts . . .

. . . is being considered by Japanese machinery makers to eliminate undercutting among themselves. They are also discussing trading agreements and export companies—such as the one already formed by four ball-bearing makers.

A new body, the All-Japan Export Associations' Council, is coordinating the discussions.

There is a difference between London and Paris . . .

. . . as shoppers in Texas (U. S. A.) will soon discover.

Last fall Dallas' Neiman-Marcus specialty store put on a "French Fortnight" promotion sale that featured feminine fashions. The idea went over so well that the store is now planning a British Fortnight for next fall—and there will be much more for the male shopper this time, from bowler hats and woollens to sports cars.

London's Victoria & Albert Museum will bring a history of men's fashions to Texas for the sale. And Neiman-Marcus management is trying to persuade the Old Vic repertory company to appear in a Dallas theater during British Fortnight. There will be tea at five o'clock.

Beware of marketing "truths". . . .

. . . advises *Food Engineering* magazine. A popular generalization is that 90% of new products fail. But among well-managed companies, the fatality rate is probably closer to 40% to 50%, according to a well-informed consultant. And he qualifies that: Smart companies, making use of research and preliminary testing, often retire an unpromising new product before it reaches the consumer.

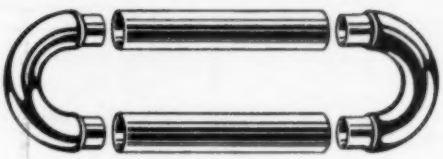
MUELLER BRASS CO. QUALITY PRODUCTS

for refrigeration and air conditioning heating and plumbing

One dependable source for all your requirements . . . from fittings to forgings

180° RETURN BENDS

A complete range of sizes for condensers, cooling coils, etc., with plain or cupped ends. Both O. D. wall thicknesses and center-to-center dimensions carefully matched to customer's specifications.

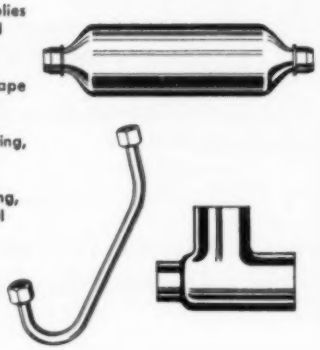


STANDARD AND REFRIGERATION TUBING

For all piping, refrigeration, and air conditioning requirements, Mueller Brass Co. Streamline copper tubing is available in all required wall thicknesses, and hard or soft tempers.

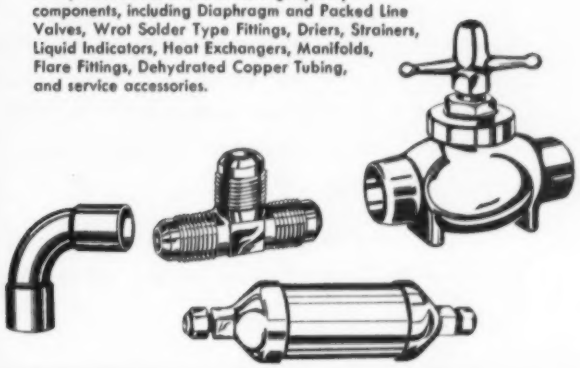
FORMED COPPER TUBE AND ASSEMBLIES

Mueller Brass Co. supplies formed copper tube and assemblies with special bending temper. Cut to customer's size and shape specifications. Complete facilities for swaging, bending, spinning, upsetting, flaring, flattening or sealing, beading and grooving, drilling, piercing, machining, joining . . . all at consistently close tolerances.



REFRIGERATION PRODUCTS

For virtually every refrigeration and air-conditioning need, Mueller Brass Co. offers high quality components, including Diaphragm and Packed Line Valves, Wrot Solder Type Fittings, Driers, Strainers, Liquid Indicators, Heat Exchangers, Manifolds, Flare Fittings, Dehydrated Copper Tubing, and service accessories.



APPLICATIONS

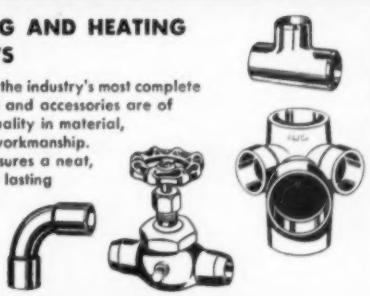
For sugar and paper mills, breweries, distillers, and other industrial applications, Mueller Brass Co. copper tubing is supplied to customers' specifications.

PACKING

Mueller Brass Co. can pack mixed groups of items for delivery to different job sites for any customer—an added saving to you by reducing rehandling costs.

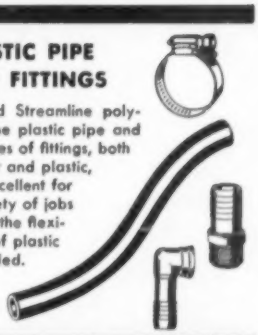
PLUMBING AND HEATING PRODUCTS

"Streamline", the industry's most complete line of fittings and accessories are of the highest quality in material, design, and workmanship. Streamline assures a neat, efficient, long lasting installation.



PLASTIC PIPE AND FITTINGS

Rugged Streamline polyethylene plastic pipe and all types of fittings, both copper and plastic, are excellent for a variety of jobs where the flexibility of plastic is needed.



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Write for your Free copy of **Plumbing and Refrigeration Manuals**

MUELLER BRASS CO. **Port Huron 43, Michigan, U.S.A.**

Cable address: Streamline

Once upon a time . . .

a company was losing money. Although its plant had a normal capacity of 30,000 "widgets", it was selling only 10,000 a year. Its operating figures looked like this: →

Price per unit	$ 1.00
Total fixed cost	$ 6,000.00
Fixed cost per unit	.60
Variable cost per unit	.65
Total unit cost	$ 1.25
Total manufacturing cost	$12,500.
Value of closing inventory	0.
Cost of goods sold	$12,500.
Sales income	$10,000.
Operating loss	$ 2,500.

Then one day a stranger came to the board of directors and said: "Make me president, pay me half of any operating profit I produce, and I'll make you a fortune."

"Agreed," they said.

So the stranger set the factory to making 30,000 widgets a year. His figures looked like this: →

Total fixed cost	$ 6,000.
Fixed cost per unit	.20
Variable unit cost	.65
Total unit cost	.85
Total manufacturing cost	$25,500.
Value of closing inventory	$17,000.
Cost of goods sold	$ 8,500.
Sales income	$10,000.
Operating profit	$ 1,500.

"Pay me," said the stranger. "But we're going broke," said the directors.

"You can read the figures, can't you?" said the stranger.

Just as everything seemed lost, an accountant in shining armor charged into the room. "Hold," he cried. "I have just changed to the system called DIRECT COSTING. We only distribute variable costs." And now: →

Variable cost per unit	$ .65
Cost of 30,000 units	$19,500.
Value of closing inventory	$13,000.
Variable cost of goods sold	$ 6,500.
Sales income	$10,000.
Marginal income	$ 3,500.
Total fixed costs	$ 6,000.
Operating loss	$ 2,500.

So the stranger was foiled and the directors are back looking for a way to make a profit—and to sell off the inventory the stranger left them with.

A Better Way to Measure Profit?

THE FABLE ABOVE has brought many a chuckle in accounting circles. But it has a point that an increasing number of businessmen are beginning to appreciate.

Accountants tell similar real-life stories that are not quite so amusing—cases where the amount of monthly profit actually exceeds the amount of the month's sales. And dissatisfaction with an accounting system that can produce such a paradox is one reason why many companies are switching from conventional — or "absorption" — accounting to what has come to be called the direct costing system.

It is well to note, however, that as yet direct costing is generally used only for internal control; adjustments are usually needed for tax reporting and reports to company shareholders.

And it is well to note that direct costing is not applicable to all industries. A recent article in *The Controller* magazine identified two industries that are not candidates for direct costing systems: businesses where production and sales —and inventory problems—vary widely with the seasons and businesses where the chief products are large individual units produced and sold on a contract basis (giant electrical generators, etc.).

If you examine the figures in the fable, one thing stands out as a major difference in the two systems: the value you place on inventory. *Business Week* magazine analysed it this way:

In direct costing, inventory values are considerably lower. Therefore, direct costing gives a more conservative estimate of how much money you are making when inventories are involved. But advo-

Yale Worksaver stacking cases of acid

PROBLEM:

Fast stacking in storage areas

SOLUTION:

Yale Industrial Lift Trucks

In the Far East or Near East—or throughout the western world—Yale Industrial Lift Trucks are busily engaged in stacking goods in warehouses, moving materials and products, easing men of backbreaking tasks. Yale Trucks are available in a full range of capacities and with a wide selection of attachments for handling all types of materials. With these trucks, you can speed goods to market, assure your business more profits and cut handling costs up to 50%.

All Yale Petrol, Electric, Diesel and Hand Lift Trucks are available in currencies of the Free World. All are built to the same high quality standards, no matter where you buy them. Let your Yale Sales and Service Representative help you select the Yale Truck best suited to your requirements.

YALE* *REGISTERED TRADE MARK

INDUSTRIAL LIFT TRUCKS

YALE & TOWNE

THE YALE & TOWNE MFG. CO.
CHRYSLER BLDG., N.Y., U.S.A.

Manufacturing Plants: VELBERT RHLD., GERMANY • WEDNESFIELD STAFFS, ENGLAND and PHILADELPHIA, PA., U.S.A.

Licensed Manufacturer: **FENWICK** SAINT-OUEN, SEINE, FRANCE • MILAN, ITALY and BARCELONA, SPAIN

Yale Sales and Service Representatives are located in Principal Cities of the World

". . . The trouble starts when you try to get a figure that accurately represents cost per unit . . ."

story begins on preceding page

cates of direct costing say that does not begin to explain all its advantages.

Essentially, reports *Business Week*, the two systems part company in the way fixed costs are handled.

The cost of any product breaks down into two main categories. First are the variable costs—such as labor and raw materials—that change with the volume of production. Second are the fixed costs—property taxes, depreciation, interest, some maintenance—that remain the same regardless of production.

Under conventional cost accounting, you determine the cost of goods sold (and the cost of inventories) by applying both variable and fixed costs to your volume. To do this you estimate the total cost per unit and multiply by the number of units produced.

The trouble starts when you try to get a figure that accurately represents cost per unit. You can find the variable cost per unit without much trouble, because it does not change with levels of production. But fixed cost per unit will be smaller when production is high, and it will rise as production falls off. Since you have to have a definite figure to work with, what you usually do is assume a normal (or standard) volume, then divide that volume into the total fixed costs. That gives you a fixed cost per unit. Adding that to the variable cost per unit gives you the total.

But when you use that estimate of cost per unit to assign costs or to value inventories you will find that the figures check out only if production matches the assumed normal. If you produce at a higher rate, you will be allowing for more fixed cost than you actually incur (over-absorption). If you produce at a rate below standard, actual fixed cost will be bigger than you allow.

Direct costing, as the name implies, charges to the cost of goods sold only the variable costs—those changing directly with volume. It treats fixed costs as a charge against total sales income, rather than as a cost assigned to particular products. In other words, fixed charges are allocated to product groups as part of the profit-planning operation—in total and not on a unit cost basis.

So long as a company sells all it makes during a particular accounting period, the difference in the way fixed costs are handled amounts simply to an internal or bookkeeping affair. In either case, its net profit comes out the same.

What is important, however, is that the books will look different.

In direct costing, one item emerges that does not emerge in conventional accounting: a marginal income figure. This, accountants say, allows management to figure quickly what any one product is contributing toward fixed charges and profits.

Marginal income figures make it clear that any product, as long as the income from it covers the variable manufacturing costs, helps pay a company's fixed charges. In orthodox accounting, it is possible to show a product losing money—because of fixed charges—even though it pays its way.

The clear picture of a product's value that direct costing provides can be a signal to management for a number of things; where to push sales, what products might be dropped, where to add volume.

Conventional accounting can give the same information, but it has to be broken out of the accounting statement. Therefore, *Business Week* points out, it is not quickly apparent to operating executives what a change in volume will do to profits.

Take the figures from the table, where variable costs are 65¢ a unit. Fixed costs total $6,000 at normal production of 30,000 units. Here's how the books might look:

	Conventional	Direct
Sales	$30,000	$30,000
Mfg. cost	25,500	19,500
Opening inventory	.....	.....
Cost of goods available	25,500	19,500
Deduct closing inventory	.....	.....
Cost of goods sold	25,500	19,500
Marginal income		10,500
Fixed costs		6,000
Net operating profit	$4,500	$4,500

Direct costing makes a product's value apparent. If your variable costs are 65¢, your marginal income is 35¢—or a 35% margin. If you double production from 30,000 to 60,000 units, your marginal income goes from roughly $10,000 to $21,000—and you subtract your fixed costs to get a new net.

Along with crystallizing the marginal income figure, direct costing has other advantages:

—By applying a price change to the operating statement, the effect on profits can be quickly checked.

—Management gets a running description of break-even points.

—Plant operating managers get an accurate measure of production performance, uncluttered by costs not under their control.

The main objection to direct costing comes from accountants who disagree with the treatment of inventories. They say that the costs of any product—hence the

CO_2
WHEN YOU NEED IT

- Eliminate shipping delays
- Eliminate shipping expense

INSURE A CONSTANT SUPPLY BY OPERATING YOUR OWN CO_2 PLANT

- Beverage Grade CO_2
- 50 lbs. per hr. and upwards
- Designed for your own local operating conditions

LIQUID CARBONIC
DIVISION OF GENERAL DYNAMICS CORPORATION
3100 South Kedzie Ave., Chicago 23, Ill., U.S.A.

value of inventory—should include

All wheel drive of the Euclid "Twin" provided the power and traction needed for work in heavy wet clay from Goulburn Channel excavation.

Maneuverability of the overhung "Twin" in and out of the narrow cuts was an important factor on this job.

Euclid "Twin" Scrapers on difficult irrigation project in AUSTRALIA

Recent completion of Eildon Dam in Victoria has greatly increased water storage capacity and necessitated major expansion of irrigation systems to control diversion and distribution. Part of this new development is enlargement of East Main Goulburn Channel for 31½ miles. This channel is the main source of water for four irrigation districts which are part of the Goulburn Irrigation System extending 100 miles from east to west across the north-central plains.

Widening the channel was a difficult earthmoving job that involved excavation of more than 3½ million yards—mostly heavy red clay. One of the contract conditions specified that the existing channel, normally in use from August through May, had to be kept open during the widening work. In order to comply with this condition, a narrow retaining wall was left between the channel and new cut for later removal by dragline. Seepage was a serious problem, causing the heavy clay to become waterlogged. Earthmoving equipment—crawler tractors and pans—frequently were bogged down completely.

Roche Bros. Pty. Ltd., contractors on this big project, decided to use their Euclid Twin-Power Scraper on the job due to the extremely tough conditions. Because of its tremendous power and traction, this three axle 18 yd. scraper immediately proved its superiority over conventional equipment. Later, a second Euclid "Twin" was added to the equipment fleet, this one an overhung engine model of two axle design providing the utmost in maneuverability. Roche Bros. engineers report that the overhung "Twin", working two 10 hour shifts per day, could move 180 loads per shift and was often the only machine capable of working a full shift because of the job conditions that made other equipment helpless.

Performance of these "Eucs" on the Goulburn Channel is further proof that "Twins" outproduce other equipment by a wide margin—that they can move the cheapest dirt under all conditions. Write for complete information and job reports from work comparable to your own.

"Moved 180 loads in a 10 hour shift under conditions where other equipment, including crawlers and pans, were often helpless."

Another Euclid job in Australia—13 million yd. Eildon Dam, largest in the Southern Hemisphere. A fleet of 47 Rear-Dump and Bottom-Dump "Eucs" was used on this project, completed in 1955.

GENERAL MOTORS OVERSEAS OPERATIONS • 1775 Broadway, New York 19, N. Y, U. S. A.

EUCLID (GREAT BRITAIN) LIMITED • Newhouse, Lanarkshire, Scotland

EUCLID PRODUCTS

value of inventory—should include everything. Separating variable and fixed costs admittedly can be arbitrary; and if you use only one part of these costs, it may give a distorted picture of inventory.

Currently, most businesses value inventory at cost or market, whichever is lower. If a business shifts to direct costing, there would be a more conservative valuation.

And this is an area where accounting becomes policy-making. ●

Credit Unions Raise Morale

NOT SO LONG AGO many personnel and financial executives thought of employee credit unions as a nuisance. Today, there is mounting evidence that they can do a job that management—with all its employee relations programs—has been unable to do.

The credit union makes it easier for an employee to borrow money—to make needed purchases, to pay bills, or to consolidate bothersome small debts. Perhaps most important, the credit union protects him against high-rate loan organizations and usurers.

For management, that means fewer requests for pay advances—and employees with fewer worries.

Credit unions are employee cooperative organizations. A group of workers agree to save their money together and then make low interest loans to members. These savings are actually shares in the credit union—and earnings (above expenses and legal reserves) are returned to members as dividends.

Normally, management does not interfere in credit union affairs. But most companies do provide a rent-free office for the credit union. Some provide personnel for administration, or may hire a paid bookkeeper to keep records. Volunteer workers do the rest.

Loans are usually made on the basis of the borrower's character, with no collateral required. A typical set of rules limits unsecured loans to $400, "pay-out" time to 36 months, and interest charges to 1% per month on the unpaid balance. (*Factory Management and Maintenance, April, p*134) ●

Financial Digest

How much do U. S. companies earn abroad? Many persons would like to know, and it is difficult to find out from most company reports.

General Electric Co., for example, lumps the earnings of its 27 foreign subsidiaries in a $22-million item labeled "miscellaneous other income—net." St. Joseph Lead Co. has a separate listing for its Argentine earnings, but only in pesos; anyone who wants to convert them can—if he can pin down the value of the peso.

Most companies publish dividends paid to them by foreign subsidiaries, but not earnings retained abroad. Primary reasons are uncertain world conditions and currency restrictions. As one treasurer told Business Week, "We do not figure a dollar is a dollar until it is in the bank."

Now there are signs of a change. Several companies published "consolidated" reports on their 1957 operations—a return to the accounting procedure used before World War II.

It can make a big difference. Colgate-Palmolive Co.'s 1957 report shows retained earnings by foreign subsidiaries of $5.5-million. Added to domestic net of $6.9-million and dividends from foreign subsidiaries of $7.5, total earnings are increased from $14.4-million—on the old basis—to $19.9-million. Per share earnings are increased from $5.6 to $7.81.

The profit picture obviously improves with a consolidated report. But there is a lurking danger for companies that publish the information: Dividend payments, figured as a percentage of earnings, decrease. And that could lead to shareholder demands for an increased dividend rate.

●

Businessmen in areas of capital shortage should take note of a recent development in Austria.

The Oesterreichische Investionskredit AG. (Austrian Investment Credit Corp.) is a promising new source of long-term capital, set up under the auspices of the principal commercial banks in the country. Investionskredit has no plans to export capital—but the idea is exportable.

Investionskredit has just negotiated a $10-million, 18-year loan (at 5½%) from the World Bank. In turn, it will make long-term loans to 11 relatively small industrial concerns, in amounts from $500,000 to close to $2-million.

Financial people see this as a way to "narrow the end of the funnel" on funds from the international lending institutions.

In the future, Investionskredit plans to increase its capital by issuing shares to the Austrian public.

●

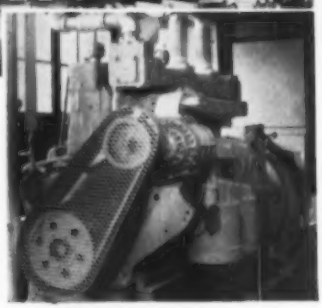
There has been excited talk about sterling lately—talk about amalgamating the rates for official and transferable pounds (IMD Jan., p 11). Business Week reports that some bankers expect the rates to be unified this year. In effect, all sterling used in trade would be made convertible at one rate, though not a fixed one.

Note that Britain has a new single surtax of 10% on company profits—replacing a 30% rate on distributed profits and 3% on profits plowed back. This change could lead to higher dividends, making British corporate securities more attractive.

cases, assembled units like servos

Many hospitals depend on

ALLIS-CHALMERS SURE-POWER ELECTRIC GENERATING SETS



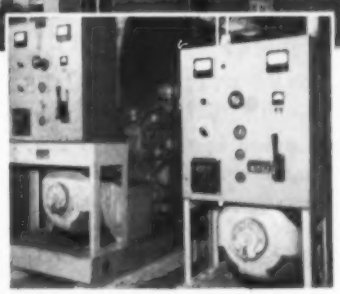
One 250-bed hospital recently installed an Allis-Chalmers 300-kw generator with diesel engine. Completely automatic, it picks up the entire electrical load in seconds, and stops when commercial power is restored.

Vital functions in hospitals, public buildings, hotels, schools, factories, etc. must continue when commercial power failures occur.

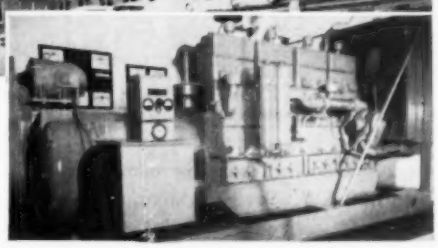
Allis-Chalmers *Sure-Power,* industrial-type, electric generating sets provide dependable electric power during emergencies. They are quickly started, instantly restore interrupted service and maintain it reliably, as long as needed. Satisfaction is assured and responsibility is undivided, because engines and electrical equipment are both products of one reliable manufacturer of long experience — Allis-Chalmers.

Many sizes and models are available from which to choose, with capacities from 5 to 300 kw, and engines that operate on diesel, gasoline or gas fuels. Each is a complete unit. No special foundation is required.

Consultation on power requirements and recommendations based on long experience are available through the Allis-Chalmers engine dealer in your area. Write for complete information.



In this large hospital, two Allis-Chalmers *Sure-Power* generating sets take up the load instantly when an external power failure occurs. Vital functions continue with only momentary interruption.

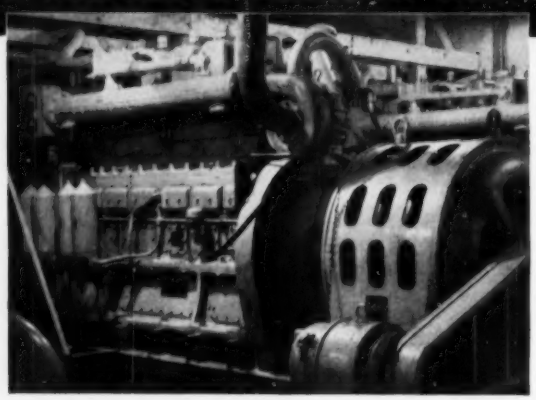


An Allis-Chalmers 200-kw generating set in this hospital carries full load during critical emergencies — to the entire satisfaction of the hospital's management.

ALLIS-CHALMERS INTERNATIONAL
DEPARTMENT MD658, MILWAUKEE 1, U. S. A.

Builders of Machinery Since 1847 **ALLIS-CHALMERS**

BGE-5



GENERATOR SETS powered by

WAUKESHA *Diesels*

supply all electric power for mine, mill, townsite and camp

On a northern inlet of Hudson Bay, 1950 air miles northwest of Toronto—where daytime temperatures hit 40° or more below zero, and the miners are Eskimos—is Canada's most northerly nickel mine. In so remote a spot the powerhouse engines must be reliable. They are. Both are Waukesha Diesels. They drive the generator sets that supply *all* electric power for mine, mill, townsite and camp of the North Rankin Nickel Mines, at Rankin Inlet, Northwest Territory, Canada. Production is 250 tons daily; ore is high grade and shipping concentrates run 13% nickel; 2.5% copper. The two Waukesha Diesels are Model LRDBS Turbo-supercharged 6-cyl., 8½ x 8½ in., 2894 cu. in. engines.

•

Waukesha Enginators (engine-driven generator combinations) for Diesel, gas, or gasoline fuels are also available up to 800 KW. Send for literature.

Export Department

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS., U.S.A.

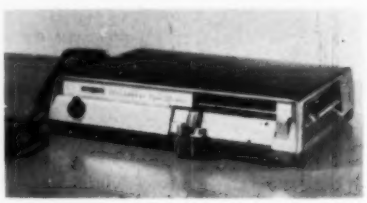
cases, assembled units like servos and anti-friction bearings can be dipped in the ultrasonic bath and cleaned without dismantling.

Cleaning, immersing, and spray rinsing are carried out in the three tanks that make up the unit. The whole process takes only a few minutes, and needs very little attention on the part of the operator. **Branson Ultrasonic Corp., 40 Brown House Rd., Stamford, Connecticut, U.S.A.**

New Adhesive, Anti-Rust Coating

A new adhesive called "Polybond" is said to "stick anything to anything." Thinned with water, it dries to a water-clear film claimed to be waterproof and resistant to gasoline, oils, fungi, weak alkalis and acids.

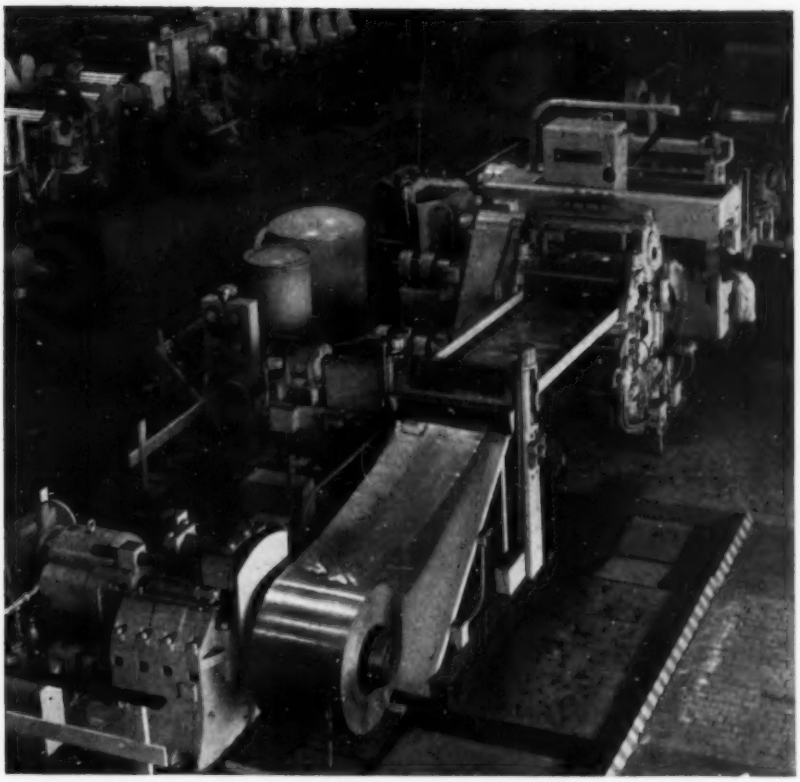
"Glopane Neverust", a rust-preventive coating made by the same firm, is painted on with a brush. Its heat resistance allows it to be applied to engine parts, exhaust manifolds, and pipes. **Corrosion Ltd., Portman Square, London W.1, England.**



Transistorized Dictator

Dictaphone Corp.'s new "Time-Master" is a transistorized machine. No warming-up period is required, and the machine starts and shuts off automatically as the microphone is taken up and returned.

The controls for recording, playing back, correcting, etc. are all placed on the microphone. On the machine itself is a "Dictate—Listen" selector, controlled by touch-buttons; loading and unloading the recording belts is done by button devices too. The "Time-Master" is lightweight and comes with a carrying case. **Dictaphone Corp., 420 Lexington Ave., New York 17, N. Y., U.S.A.**



Here's how United States Steel builds quality into USS Tin Plate

From the start of manufacture until it is shipped to you, USS* Tin Plate is subjected to exacting quality controls. These manufacturing and inspection techniques are among the most advanced in the industry. United States Steel has pioneered in the field of coated steel products, particularly electrolytic tin plate, the modern method of making tin plate – to bring you high uniformity and maximum economy.

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LOOKING AHEAD

Technology

World's Cities Look to the Monorail

After many years of discussion, city planners appear ready to take to the air to solve traffic and public transportation problems. Overhead monorail lines are under consideration in London, Caracas, Los Angeles, and San Francisco. Germany's 12-kilometer link between Barmen and Elberfield has convinced skeptics by carrying 17 million passengers a year with perfect safety. Tokyo recently opened a pilot 335-meter monorail system for sightseers at its Ueno Zoo. The proposed system for San Francisco would be 14 kilometers long but could be extended to 50 kilometers later. Cars would be made of aluminum, plastics, and fiberglass to hold down weight. Automatic control would space trains, slow them down on curves, position them in stations. (Product Engineering, Apr. 7, p 20)

Chemical Improves Beer Storage Life

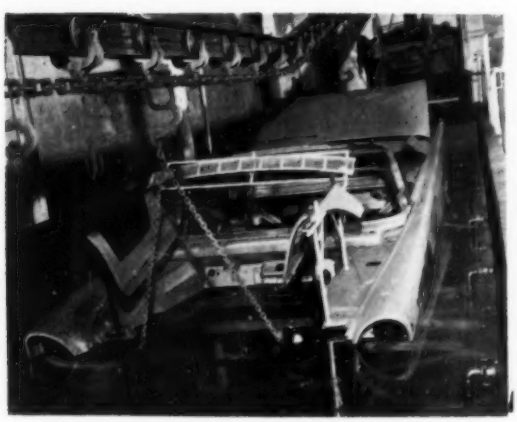
U. S. breweries soon wll be using polyvinylpyrrolidone (PVP)—a compound often used in hair sprays—to improve the clarity, light-stability, and storage life of beer and ale. PVP clears up "chill haze," a cloudiness from tannin-protein compounds that occurs as beer is chilled. Brewers normally use proteolytic enzymes to dissolve these compounds, but the precipitates often reform, and beer life is shortened. PVP will remove tannins and raise the beer's storage life. (Chemical Week, Apr. 26, p 48)

Super-Turbines to Power Inter-American Liners

Two cross-compound turbines coupled with precisely tooled reduction gears will power each of the two new passenger-cargo liners, (the S.S. Brazil and S.S. Argentina) soon to be put in service by Moore-McCormack Lines, Inc. Turbines will use high-velocity steam at extremely hot temperatures—855 F with a throttle pressure of 265 kilograms—to give each vessel the power of 12 modern diesel locomotives. A series of gears will reduce turbine speed to the rate required to rotate the ship's propellers.

Stretcher Expands Wood Without Warping

A wood-stretching machine developed by U.S.A.'s Higgins Industries, Inc. may make it possible to produce hardwood floor tiles competitive with asphalt coverings. The process rearranges the fibers of the lumber at its maximum wet state. Wood veneers made with the process are flexible, do not shrink, warp, crack. (Business Week, Mar. 15, p 162)

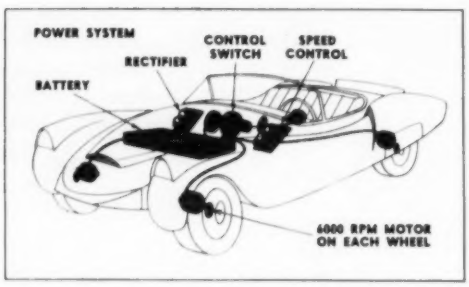


Cars Get Dip in Water-Base Paint

The U. S. automotive industry has found a new use for water-emulsion paints. As an aid to preventing fires, the inner surfaces of all 1958 Lincoln cars now are given a complete coating by dipping them into a tank of latex (picture left). Engineers found that a paint-spraying system that would do the same job would be prohibitively complicated. But dipping the cars in a 35,000-liter tank filled with solvent-thinned paint meant creating a dangerous fire hazard. (Chemical Engineering, Apr. 7, p 76)

Russia, Hungary, Japan Enter Computer Market

Computers are becoming more versatile, lower-priced. The efforts of U.S. and British manufacturers to put electronic tools in the hands of small and medium-sized business firms (IMD, Dec. '57, p 55) soon may be joined by Russia and Japan. . . . The Soviets appear to be moving rapidly in the development of a whole range of computers, both analog and digital. Among them is a transistor unit said to be as portable as an ordinary office machine. Russian scientists expect their computers to be used for process control, automation, machine design, investigation of chemical reactions, among other applications. Hungary is working on a logical machine that is expected to be able to determine the optimum arrangement of the wiring for a power plant and test it for defects under load before construction. (Metalworking Production, Apr. 11, p 231). . . . Japan's Nippon Electric Co. expects this year to produce first commercial models of a transistorized digital computer that will cost about $60,000, and is said to compare with more expensive U.S. models. World marketing is planned for 1959. A laboratory model is being used to solve plant management problems. (Electronics, Apr. 4, p 50)



Electric Car May Hum Again

The electric automobile, confined to the museum for the past 30 or 40 years, may be on its way back, if an American inventor has his way. It will come only after storage batteries now in the laboratory are perfected. The future electric car at left—would cruise at 40 k.p.h., be cheap to run. Batteries could be charged at any AC outlet. (Electrical World, Mar. 10, p 42)

Czechs Develop Nylon-Coating Technique

Nylon-coated compressor pistons, turbine rotors, and fans are being made in Czechoslovakia by a new hot-spray technique. The parts are said to be as highly resistant to cavitation as stainless steel. The metal to be coated is heated to 50F above the melting point of the plastic, which may cause some difficulty with low-melting non-ferrous metals. (Product Engnieering, Apr. 14, p 19)

Heat Pumps Get a Mass Trial

Individual heat pumps will cool and heat the 1,535 units of a U.S. housing development in Little Rock, Arkansas—the world's first large-scale use of these recently-developed systems. The heat pump works like a reversible refrigerator, extracting heat from the outside air in winter and from inside the house in summer. It is all electric, requiring no chimney or fuel storage. (Engineering News-Record, Apr. 3, p 25)

Russians Plan on Huge Solar Power Station

The Soviet Union may be the first nation to use the sun's rays for generating power on a commercial scale. Planned for Armenia's Ararat Valley is a solar station capable of generating 2.5 million kwh and 20,000 tons of steam annually. The system will use 1,300 mirrors to focus the sun's rays at a boiler on top of a 40-meter tower. The mirrors, mounted on special carriages, will move automatically along 23 concentric railways to follow the sun. (Chemical Week, Apr. 26, p 56)

Chemicals Do a Milling Job

Digested from AMERICAN MACHINIST, March 24, p122

CHEMICAL MILLING is not a technique designed to replace machine milling. Both are basic production methods, and they often are used in the same factory. Mechanical milling is cheap and fast, but its chemical counterpart has some unusual talents—which are just now coming to the fore.

Chemical milling can remove metal from the most complex curves, and from all surfaces of a metal piece at one time. The process can mill contoured parts as easy as flat stock. Also, in chemical milling it is possible to produce a large number of parts simultaneously.

How the process works in general outline can be seen in the drawings at right. Here a formed sheet of aluminum 4.4 millimeters thick was to be milled, with etchings for sections at four different depths. A maskant was applied over the entire sheet.

In the first step, the maskant covering the area that would be most deeply etched was scribed and stripped. Immersion in a caustic solution then cut away .4 mm of metal from this area—the difference in depth between it and the next etching. The maskant was then scribed and stripped for the next etching, and another chemical immersion took .2 mm off of the two exposed areas. A third and then fourth area was successively exposed, each followed by an etching of .1 mm.

The final product (bottom drawing) is a sheet with five thicknesses. The top strip, which was covered by the maskant throughout the process, retains its original thickness. The other areas have been cumulatively etched, through the use of a single templet that was color coded to indicate the order of steps.

Chemical milling has made greatest strides in the aircraft industry, especially in the precision removal of metal from contoured parts such as wing tips. But engineers see a wide variety of applications for the technique. It can perform tasks that are impossible or costly with machine tools.

Chemicals can easily mill many of the hard alloys, irrespective of the form or shape of the part. It is useful on magnetic materials, where magnetic properties often are impaired by machine milling. An added advantage is that the parts produced are clean and can be painted or surface-treated immediately after milling.

A suggested application is in the forming of impellers for air compressors. These must be very thick near the shaft so that they can withstand centrifugal loads, but the rest of the impeller normally is made thicker than needed to insure proper cooling during casting.

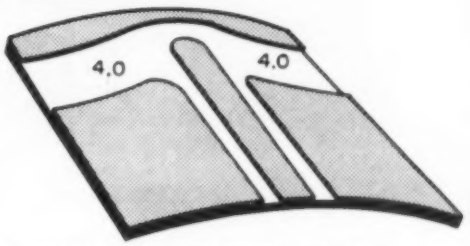
With chemical milling, the excess metal can be removed from the impeller after casting. This would reduce the loads on the shaft and bearings, and it would increase the safety factor of the impeller.

Men engaged in perfecting chemical milling believe that it offers many promising uses for the automotive industry. Among them are the hood and trunk lids of automobiles. These normally are fabricated from thin panels of metal, which are then made rigid by separate stiffeners. The stiffeners are specially designed with lightening holes to make sure the lids are not too heavy. Also, extreme care must be taken when the lid and the stiffeners are welded so that the assembly won't warp.

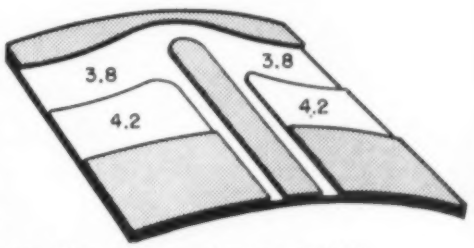
Using chemical milling, the lid could be formed out of stock that is thinner than the combined thickness of the stiffeners and panel. The underside then would be milled so as to provide stiffening ribs in the desired locations.

As a relatively new manufacturing method, chemical milling requires a learning period before it can be employed most effectively. Aluminum alloys, magnesium, and titanium alloys have been milled successfully with the technique. The chemical milling of steel alloys is under test, and initial results are encouraging.

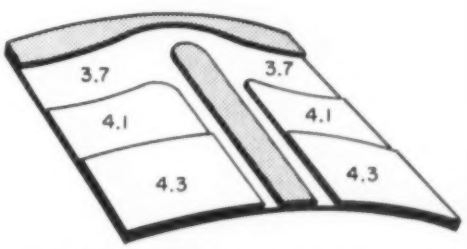
Special precautions for chemical milling require that the part be free from surface defects and lubricants. The process does not remove surface defects, so lines or marks must be removed beforehand if they are objectionable. ●



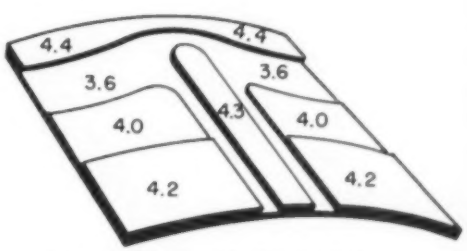
1 Chemicals first cut away .4 mm of aluminum, for the deepest etching.



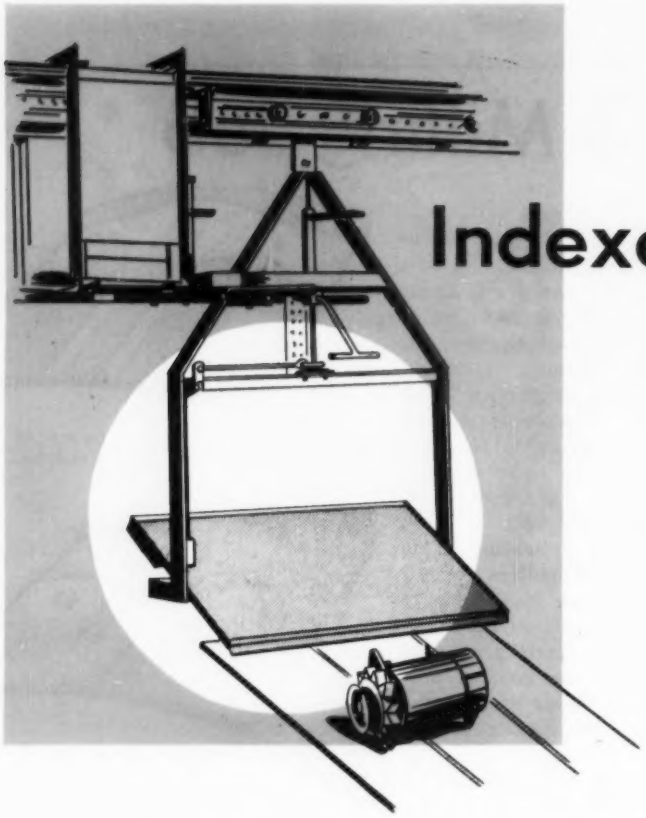
2 Then, with second area unmasked, both areas lose another .2 mm.



3 A third step etches another .1 mm from all three exposed areas.



4 In final etching, only the masked top retains its original thickness.



Indexed Conveyors Trim Costs

Handling costs go down and efficiency goes up—when conveyors become part of an integrated system that distributes, stores, and serves as a feed for production lines.

CONVEYOR SYSTEMS can do more than move materials from one end of the factory to the other. They can select assembly parts, distribute them to stations where needed, offer temporary overhead storage (IMD, Nov.'57, p45), and provide a controlled feed for several production lines.

These advantages come from the use of indexing and preselecting devices. A conveyor is keyed to route its load to a given station on one of several floors, transfer it automatically from the main line to a siding, and hoist or lower it as required.

Such systems can be very complex and complete—as they are in huge automotive plants—or they can be designed to serve a limited purpose at a warehouse or small factory. The net result is more efficient use of factory space, stepped-up production schedules, savings in time and labor. Here is how three middle-sized British firms are utilizing selective conveyor systems, as reported in a recent issue of *Business* magazine.

I. Home-Made System

An inexpensive monorail fitted with pre-selection equipment has revolutionized raw material distribution at the travel goods factory of S. Noton & Co. Ltd. Workers used to go to the storeroom personally with requisitions. Now supplies come to them automatically on trays suspended from the monorail.

Each tray has a trip lever, which can be adjusted to one of ten positions, representing the ten stations on the circuit. When the carrier arrives at the station for which it is intended, an arm catches the trip lever. This tilts the base of the tray and allows the goods to slide onto a chute or roller track.

Carriers travel at 12 meters per minute—slowly enough for goods to be loaded by hand. The 150 trays keep about two days' production supplies circulating. This means a great savings in floor space, as stations take only what they need at once.

A worker can make a special requisition from stores by clipping his order to the carrier and setting the trip lever to 10 (the code for the storeroom). The system, though elementary, cuts out the need for a telephone link between stores and production. Designed and built by the firm's own engineers, at a cost of about $11,000, the system has meant substantial savings and an increase of factory capacity by about 120%.

II. Night-to-Day Storage

Wolverhampton Die Casting Co. Ltd. has to coordinate a slow casting process with fast finishing operations. It does so by running casting machines day and night, but working trimming and finishing lines only during the daytime shift.

The problem was what to do with the night shift's production. Formerly castings were stored in pallet boxes; but many got damaged through handling, storage took up too much space, and pallet boxes cluttered up the trimming and finishing lines. Quality control suffered because parts were not necessarily finished in the order that they were cast.

A newly-installed system consists of an overhead circulating conveyor from which are hung "tree type" carriers—steel rods with arms projected at staggered

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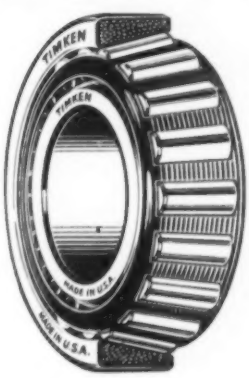

intervals. As castings are produced, the operator hangs them on these arms, which are designed so that castings cannot touch each other and suffer damage.

When a carrier is full, the operator presses a button that starts the carrier to the finishing lines; or, if these lines are busy, to a storage loop in the roof. If other carriers already are in storage, the fresh load stops at a preset distance behind the previous carrier. Production piles up neatly during the night on the 120-meter conveyor loop of the system.

When an operator requires work, she summons it by pressing a button. As she does so, all other loaded carriers move one step forward and her empty carrier returns to casting.

The installation was expensive —about $110 per meter of conveyor—but the investment is being repaid quickly. Advantages include a 50% savings in labor, storage space freed for production, the elimination of practically all product damage.

III. Ends Waiting Time

A selective conveyor system designed by Brooks Motors Ltd. for its electric-motor factory serves up stators to 190 winding operators in five lines, each line with its own feed belt. Unnecessary handling has been eliminated, waiting time for work reduced, production costs cut by almost 20%.

Each operator has a reserve table beside her, connected to the belt conveyor by a short slide. As work is taken off the table, a switch signals the control panel that fresh work is required. The controller selects a suitable job, marks the station number on the order, and passes it through a hatch to stores.

The stores attendant assembles the required parts in a tray, and sends the marked tray to a distribution point where it is routed to one of the five belt conveyors. Here a distribution operator dials the required station on a selector switch.

The work finds its way to the proper station by means of a photo-electric counting mechanism. A light beam shines through holes in a disc that is synchronized with the belt. Each hole represents a station, and when the pre-set number of holes have been counted, the work stops at its destination. ●

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Russians Go Ahead In Coal Mining

THE SOVIET UNION today is mining 15 metric tons of coal a second—more than Britain, France, India and Japan together. Since 1952 production has climbed steadily, increasing at a rate of about 10% a year. Here are some of the new techniques that are helping them:

1. Floating coal to the surface by pipe, after injecting deposits with liquids such as calcium-chloride solution.

2. Use of hydraulic mining equipment, and hydraulic transport of coal to screening plants.

3. Technicians are attacking the problem of heat in deep mines, testing new air-cooling systems.

4. Remote-control mining with the aid of push-buttons and television. (*Coal Age, Apr., p41*)

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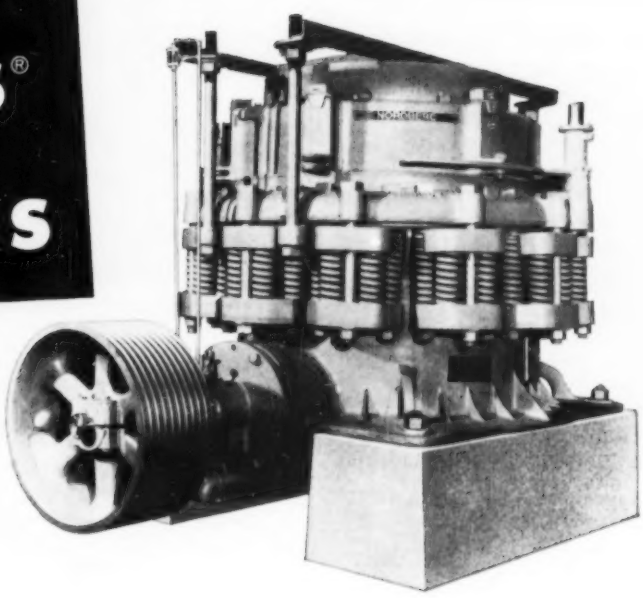

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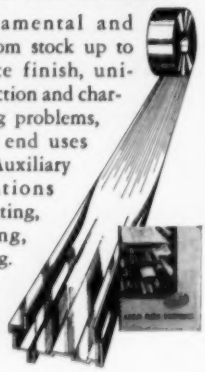

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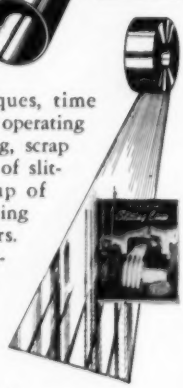

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Plastics Blanket the Farm

Digested from MODERN PLASTICS, Apr, p91

PLASTIC MANUFACTURERS have found a new world to conquer. The opportunity in years to come lies in a wide range of aids to agriculture—mulches, silos, greenhouses, pond liners, irrigation pipes.

Though much of the activity to date has been at model farms and agricultural experimental stations, the new tool can mean savings and increased productivity for operators of big and small farms. Polyethylene and vinyl films appear to have the most potential. Here are several of the applications that have caught the imagination of food and agricultural experts.

Mulches—Experts regard this as the most promising field. A thin film of plastic—often laid by machine—does an outstanding job in holding moisture and heat in the soil, retarding weed growth, and guarding against mold rot.

A melon farm in the U.S.A. reported a two- to three-fold increase in yield and two-week earlier ripening after spreading a black polyethylene mulch over plantings.

Silos and Silo Covers—Dairy and cattle men have been searching for an economical way to ensile their cattle feed over the fall and winter. Such feed has 50% more value than hay. Plastic films—as a cover for either a trench silo or field stacks—may be the answer.

Greenhouses—The material costs of a plastic-film greenhouse may be as little as a tenth of those for a glass structure. Construction is cheaper and easier: the film is nailed or glued to a wood frame.

Agriculturists also find some special advantages in using synthetic materials. A plastic greenhouse is said to hold moisture better than glass, and less heat is lost at night. This adds up to quality crops and greater yield.

Pond and Irrigation Ditch Liners—About a third of all water used for irrigation is lost in storage or transit. Lining ditches and collecting ponds with vinyl or polyethylene film is a remedy now being recommended. A dirt backfill is used to hold the edges of the film in place. The linings reduce water loss to negligible amounts.

Other Uses—Agriculturists also see much promise in flexible plastic irrigation tubes, row crop covers for starting crops early (picture above), machinery and haystack covers, film wrappings of balled roots, evergreens, rose bushes, and cut flowers.

Greater use of plastic irrigation pipe is expected to come with improved resins that will enable plastics to be used on the heaviest installations. ●

Publications Digested

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American Letter
American Machinist
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Business Education World
Business Week
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American Bankers Association, 12 E. 36th St., New York 16, N. Y.

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The Economist Newspaper, Ltd., 22 Ryder St., London, S. W. 1.

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Harvard University, Soldiers Field, Boston 63, Mass.

Heating, Piping & Air Conditioning
Keeney Publishing Co., 6 N. Michigan Ave., Chicago 2, Ill.

Industrial Marketing
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The Management Review, Personnel, Supervisory Management
American Management Association, 1515 Broadway, New York 36, N. Y.

Metal Progress
American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio

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The Paper Industry
Fritz Publications, Inc., 431 S. Dearborn St., Chicago 5, Ill.

Petroleum Press Service
Petroleum Press Service, 91 & 93 Bishopsgate, London, E. C. 2

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Temple Press, Ltd., Bowling Green Lane, London, E. C. 1

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Printer's Ink Publishing Co., Inc., 205 E. 42nd St., New York 17, N. Y.

Rubber and Plastic Age
Rubber and Technical Press, Ltd., Gaywood House, Great Peter St., London, S. W. 1

Sales Management
Bill Brothers Publishing Corp., 386 Fourth Ave., New York 16, N. Y.

The Times Review of Industry
The Times Publishing Co., Ltd., Printing House Square, London, E. C. 4

Welding Engineer
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YOU & Management Reading

A Book for the Boss

The President's Guide provides advice on the critical activities of a company president—such as cutting costs, raising money, developing new products and markets, getting more and better work from employees, increasing personal income and wealth. 1000 pages; $35.00. (Prentice-Hall Inc., Englewood Cliffs, New Jersey.)

New Bulletins from Industry

A Study In Management—The Univac II Data Automation System will aid management in investigating the electronic computer, its capabilities, operation and applications. (Remington Rand Intl., 315 Fourth Avenue, New York 10, N. Y.) . . . The Winter issue of the Lewis-Shepard magazine Lever presents case histories of successful applications of mechanized materials handling techniques in a wide-range of industries. (Lewis-Shepard Products Inc., 125 Walnut St., Watertown 72, Massachusetts) . . . Two bulletins (P-FCUF and P-FFR) will tell you about Scotch Brand filament tapes for heavy-duty packaging and materials handling. (Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6, Minnesota.)

Inside a Woman's Mind

What Makes A Woman Buy—written by a woman advertising agency copywriter—views the lady shopper, a shopper with new tastes, perceptions, and buying patterns. The book is a useful aid to marketing men, especially in the food industry. 294 pages, $6.00. (McGraw-Hill Book Co., 330 West 42nd Street, New York 36, N. Y.)

Engineers Must be Managers, Too

Management For Engineers is designed to brief technical men on the decision-making procedures of business firms. There are chapters on legal forms, money flow, production costs, labor and equipment costs, and organization. 453 pages; $6.75. (McGraw-Hill Book Co., 330 West 42nd Street, New York 36, N. Y.)

Selecting Executives for the Future

Where, when, and how to find potential managers? Col. Lyndall Urwick (page 22), the British consultant, answers these questions in a booklet entitled Sixteen Questions About the Selection and Training of Managers. 36 pages; 2s 6d or 35¢. (Urwick, Orr & Partners Ltd., 29 Herford Street, London W1, England.)

Briefly Noted

Today's markets stress the importance of packaging as a contributing factor to increased profits. Know Your Packaging Material provides you with the latest information. $3.00. (American Management Association, 1515 Broadway, New York 36, N. Y.) . . . Foreign Commerce and the Antitrust Laws discusses various legal problems encountered by foreign corporations doing business in the U. S., or with U.S. firms overseas. $16.00. (Little, Brown & Company, 34 Beacon Street, Boston 6, Massachusetts) . . . Sugar—From Scarcity to Surplus is the story of the sugar industry of the Western Hemisphere, and its growth during the past 70 years. 224 pages; $5.00. (Chemical Publishing Co., 220 Fifth Avenue, New York, N. Y.)

YOU

Personal Affairs

Listening With the Second Ear

As every owner of a high-fidelity sound system knows, music reproduction is coming closer and closer to "concert-hall" realism. The latest development is stereophonic (actually, binaural) sound—the use of two channels for recording, and separate amplifying and speaker systems for playing. "Stereo," in effect, is like listening to a concert with two ears instead of one.

Stereophonic recordings are available now on magnetic tapes; later this year, "stereo" disc records should be in good supply in the U.S.A.

If you already own high-fidelity components, the new equipment you will need—other than a second amplifier and another speaker—is a special stereo cartridge (about $20 to $25, including a diamond stylus). Caution: be sure you get a "compatible" cartridge that will also play conventional recordings. That way you can convert to stereo gradually.

Stereo discs will probably cost about 25% more than the same recording on a conventional disc.

If you plan to buy stereo equipment, a tip from the experts: Each amplifier in a double-channel system need not be quite as powerful, or each speaker as big, as equipment for a single-channel system.

Perhaps you—or your wife—worry about the clash of modern radio or television cabinets with "period" furniture. One answer is to have a special cabinet hand-crafted. A British company called Period High Fidelity, Ltd., 28 South St., London W.1, England, specializes in this work—and offers such styles as Chippendale bureaus, Regency breakfronts, Elizabethan sideboards, bow-fronted Sheraton chests, lacquered chinoisery cabinets.

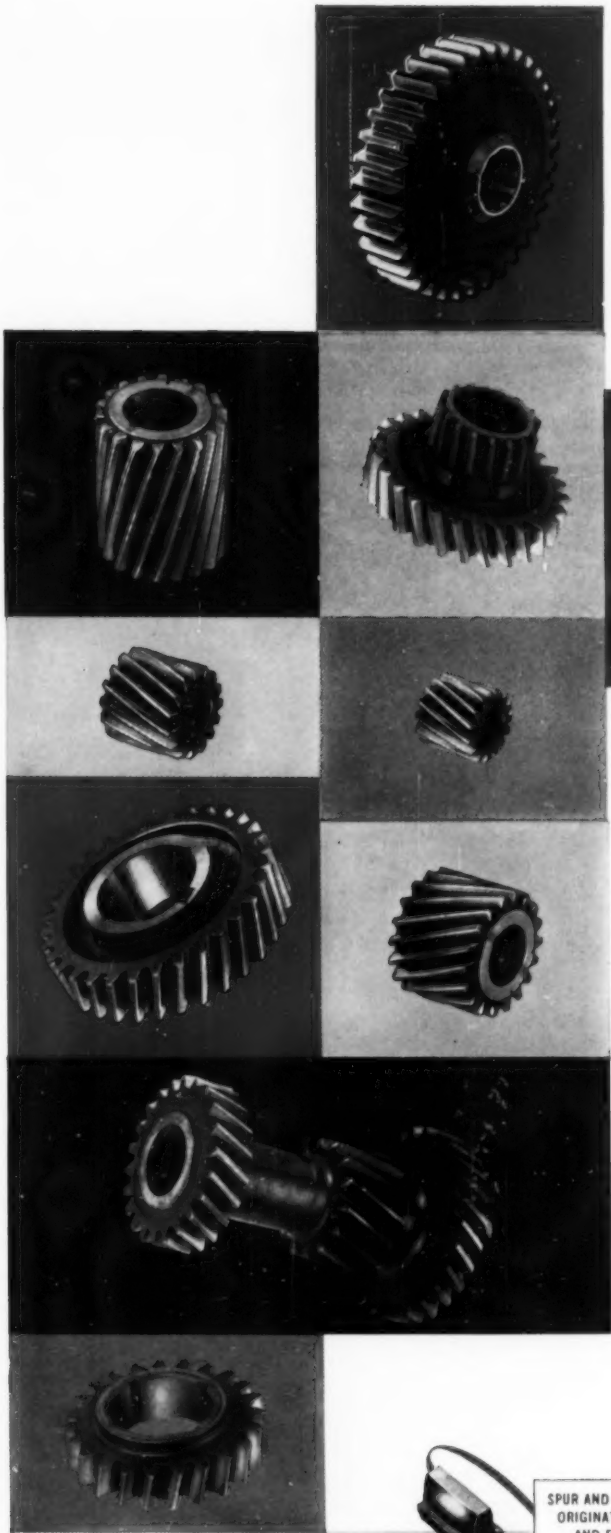
Sunning Without Burning

One of the best ways to avoid painful sunburn is to condition yourself with an ultra-violet ray sunlamp. Expose each side of your body for five minutes every day for two or three weeks.

When in the sun, there are a variety of "natural screeners" that will help keep off the sunlight—petroleum jelly, zinc oxide, and oils. But chemical screeners are considered better for sunbathing. A good commercial compound—cream, ointment, or spray lotion is capable of filtering out about 85% of the sun's ultra-violet rays.

There is also an oral medical preparation (8-methozalen) that your doctor can prescribe—side effects are not fully known. Two capsules taken two hours before exposure double your ability to withstand the sun's rays.

An old fashioned tiger hunt might be just the thing to rejuvenate jaded business executives. The Maharaja of Rewa, India, operates an organization called Tigerland, Ltd., which conducts hunting trips and offers a view of the only white tiger in captivity. . . . . **A taste for champagne** will cost a bit more. Disappointing grape harvests in France will cause a price jump, maybe 10% to 15%.



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If you want to reduce the cost of silencing noisy gears (1″ to 12″ PD), write for Bulletin H 57-2.

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